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THE MEDICAL AND MATERIAL ASPECTS OF INDUSTRIAL EMPLOYMENT FOR THE INSANE.[1]

BY G. ALDER BLUMER, M. D.,
Medical Superintendent, Utica State Hospital, Utica, N. Y.

Carlyle says somewhere, "There is always hope in the man who actually and earnestly *works*. In idleness alone there is perpetual despair." True as this is of all men, it is especially true of the insane, idleness among them being oftentimes a symptom of their malady that calls for active treatment by active work. Nothing new in this doctrine, say the quidnuncs; and they are right. It has been preached for generations, and in some institutions preaching and practice go hand in hand as blessed means of saving multitudes of insane men and women from chronic insanity, or of making the chronic lunatic a contented, peaceful, useful member of society despite his detention. But I am convinced that much remains to be done everywhere to secure for occupation the eminent place to which it is entitled in practical therapy. It is human nature, especially among physicians, to think and speak slightingly of simple, plain, every-day curative agencies and to exaggerate the healing virtue of the unknown quantity. With respect to drugs, while we doubtless understand their action better than our forebears, and realize that in their relation to the *corpus vile* they are, like everything else in this

[1] Read before the American Medico-Psychological Association, May 13th, 1897.

world, subject to law, we often exhibit a child-like faith that suggests the mysticism of the middle ages. Our mail brings day by day a new claimant for recognition fresh from the press of the wholesale drug house, and latterly even the transatlantic pharmacist, not backward in his appreciation of our craving for things European, thrusts his foreign envelope under our noses to call our eager attention to some new remedy of strange name. So we go on experimenting with this drug and with that, year in and year out, groping, vaunting, doubting, spurning, each by turn, till finally we sometimes lose faith in the permanent value of any drug and run the risk of ultimate entrance upon the stage of therapeutic nihilism. Thus it happened, not long ago, that when a member of this Association assumed charge of a high class private hospital, the only drug which he could find in the dispensary was that much advertised remedy whence "gladness comes." By all means let the careful, patient, scientific experimentation go on, but let us give to that much abused word "scientific" a wider range of meaning, regarding science as that limitless field of mental activity which is concerned in the deducing of general laws or principles from observation of phenomena; truth or knowledge, of whatsover kind, ascertained by observation, experiment and induction. In other words, let us not for a moment allow ourselves to think that "bottle medicine," to which the layman pins his faith, is scientific treatment for the insane, while work as a curative agency is not. The contention of this paper is that as compared with drug treatment, so far as the great mass of any asylum population is concerned, that by occupation, properly systematized and diversified, is of immeasurably greater consequence. And inasmuch as the drugs chiefly prescribed in hospitals for the insane are narcotic, I will go further and assert that these latter may in the long run do more harm than good. But let us insist that work is treatment and not entertain the belief, born of centuries of foolish tradition, that because we are not putting nauseous drugs into our patient's stomach we are not doing him or his friends full justice. To the question, "Is he taking any medicine, doctor?" let the answer come boldly, when necessary, in much the same emphatic manner as a few years ago a certain railroad magnate expressed himself in New York with reference to the public.

If there must be a philosophical, that is, "scientific" reason for our attitude on this question, and it seem necessary to talk learnedly of brain cells to secure recognition for employment, one may call attention to the grounds upon which the modern pedagogue approves manual training as an integral and important part of education and, *mutatis mutandis*, point the obvious moral. Let it be remembered that the motor area in the brain for the arm and hand is vastly larger than that controlling any other portion of the body of equal size except the face, showing that it requires a vast number of cells to effect the fine adjustments and delicate co-ordinations of the muscles of the hand in its infinite variety of movements; that nerve cells, motor as well as sensory, grow and develop like any other part of the body through nutrition and functional activity, and that exercise, properly regulated, is essential to their healthfulness. We sometimes lose sight of the fact, although it lies on the surface of cerebral physiology, that voluntary muscular movements have the effect not only of exercising the muscles involved, but also of calling into activity the motor cells which control them; that these motor cells are made to act and develop only by means of the muscles; and that, therefore, exercise is indispensable to the proper development of the motor area of the brain.[2]

Indeed, so great an authority as Crichton-Browne reminds us that "in persons who have been long bed-ridden by chronic disease and debarred from all muscular exercise, the whole motor area of the brain is, after death, more or less atrophied and water-logged. It is unquestionably essential to the welfare of all motor centres, and especially of the large and complicated motor centres of the hand, that the parts with which they are immediately connected should be used in an active and varied manner."[3] And as showing the important part played by these motor cells in brain nutrition, the observation is in point that the amputation of an arm or a leg during childhood is vastly more detrimental to the corresponding brain centre than a like sacrifice of limb in the adult. In his charming essay on "An Apology for Idlers," Robert Louis Stevenson insists that "extreme busyness, whether

[2] See Manual Training. An address delivered before the Massachusetts Teachers' Association at Worcester, Mass., Nov. 30, 1895, by Thomas M. Balliet.

[3] *Ibid.*

at school or college, kirk or market, is a symptom of deficient vitality; and a faculty for idleness implies a catholic appetite and a strong sense of personal identity." All very well this as a special plea and as a special club with which to attack that "sort of dead-alive, hackneyed people who are scarcely conscious of living except in the exercise of some conventional occupation." But it does not affect the proposition that physical energy means a good motor brain area and, conversely, that physical laziness implies defect there. Moreover, your average patient in an asylum has neither catholic appetite nor strong sense of personal identity, and cannot, therefore, give himself over to random provocations. "It is no good speaking to such folk; they cannot be idle; their nature is not generous enough," says Stevenson, "and they pass those hours in a sort of coma which are not dedicated to furious moiling in the gold-mill." The argument for the continuous employment of the insane could not have been more happily stated by an experienced alienist who had witnessed in his wards the baneful effects of idleness and noted the blessed change wrought by active employment in insane folk whose nature was not generous enough for idleness. It was the recent experience of Nansen in the management of his crew of brave sailors in Arctic seas, and so it must ever have been and will ever be.

I began my paper by disclaiming novelty for my theme. Such disclamation eminently befits the successor of Amariah Brigham, the first superintendent of the Utica State Hospital, who, in his first annual report, that for the year 1843, showed a wonderful foresight and a masterful grasp of the conditions that confronted him in his pioneer work for the insane of New York. Hear his words: "That many of the insane are benefited by labor, especially in the open air, is unquestionable. . . . The number able to labor will vary in different institutions. In some, especially in those that have been long established, are many old and incurable cases that are made much happier by daily labor. In such institutions these may be classified and taught trades, and do much towards supporting themselves. I hope the time will speedily come when, in every State, good asylums will be provided for this class of patients and for all the insane. I am clearly of the opinion that, with a good farm connected with

such asylums, and the judicious arrangement and management of shops, one-half of the incurably insane of our country would perform sufficient labor to support themselves and would be happier and more healthy for the exercise. Incurable cases, instead of being immured in jails and in the town and county poorhouses without employment, where they are continually losing mind and becoming worse, should be placed in good asylums and have employment on the farm or in the shops. In this way they would, in general, be rendered much happier and some would probably recover."

Nothing could illustrate more fitly the genius of Brigham as a pioneer in asylum management in New York than this passage from his first report; neither could anything silence more effectually the claims of those who would arrogate to themselves priority in the discovery of the promise and potency of work as a means of treating the insane. Not that Brigham was himself the first to lodge a caveat; indeed, it were a hopeless task to enquire who, among observing healers of the mind, first learnt the lesson taught by Ecclesiastes, the preacher, that "by much slothfulness the building decayeth and through idleness of the hands the house droppeth through." What boots the inquiry? Suffice it that to-day there is on this subject universal agreement.

It were an easy task, though to you tedious in the recital, to give case after case of patients who have been helped on the road to recovery from the moment of entering the fields or the workshops and being placed in surroundings that approximate the conditions of the sane extramural existence. That is not the purpose of this paper. All I care to do is to call renewed attention to an old subject and, if may be, to suggest the teachings of a personal experience. While at the Utica State Hospital, from the earliest days of Dr. Brigham's administration, over fifty years ago, field and shop work seem to have been recognized and put into practice, for some reason the latter had been allowed to fall into desuetude. There is no evidence that, until within recent years, shop work had at any time played an important part in the institution. There was a whittling-shop, so-called, and a few patients worked in the general shops of the asylum as is done everywhere. Printing was also carried on in a small way. But ten or eleven years ago there was no general workshop for patients in which large numbers of men

were systematically employed. This feature of the place has been a thing of comparatively late growth and evolution, till now, if Utica can claim a *genius loci* at all, something that distinguishes, pervades and dominates, it is its industrial shops. My desire and hope is that the presentation of this paper may have the effect of inducing more superintendents to go and do likewise, and thus, by removing this sign of particularity (which, as we know, is not generally considered that of sanity), bring each institution within the pale of accepted and conventional practice.

Work was begun in a small way by engaging an upholsterer, whose success as a jack-of-all-trades had been already demonstrated at the Morris Plains Asylum, New Jersey. Later, a like draft was made upon the Rockwood Asylum at Kingston, Ontario, where shop work was being successfully practiced, especially in brush making. It was a modest beginning, but such was the immediate success of the brush and mat-making and general upholstery work as a means of emptying the wards of restless or listless patients, that it soon became necessary to secure more space. Extension of buildings and enlargement of scope occurred *pari passu* till now the patients' manufacturing department occupies a building two stories high, 210 feet long and 36 feet wide. In this building there are employed, out of a population of 486 men, an average of 127 patients.[4] Here follows an enumeration of the principal industries, together with the number of patients employed on April 21, 1897:

Industries.	No. of patients employed.
Making brushes and brooms	21
" mats	5
" stockings (by machinery)	10
" combs and buttons	13
" shoes	4
Upholstering	57
Printing, ruling and bookbinding	17
Total	127

[4] This does not include the tailoring department, where 8 patients are employed and where all the clothing is made for patients as well as attendants' uniforms. One tailor only is hired.

It will occur to this audience that so large a number of patients employed day by day in industrial pursuits would soon produce a surplus of wares if consumption were confined to one institution, and the intelligent and cautious inquirer may desire to know whether we have the temerity to brave the united forces of Labor, writ large, and recklessly to invite the attention and displeasure of that modern knight-errant, the walking delegate, in his espousal and valiant championship of the cause of *honest* as against institutional toil. The answer is that we evade that ubiquitous crusader and dodge his issue by keeping without the open market and offering our products only to our sister hospitals for the insane in the State system. This right is conserved to us by special statute, the Insanity Law of 1896 having specifically provided that "the State hospitals may manufacture such supplies and materials to be used in any of such hospitals as can be economically made therein."

To the State Commission in Lunacy the hospitals of New York are indebted for a quick apprehension of the possibilities of co-operation along industrial lines. Application to extend the scope of manufacturing enterprises at Utica met with favorable action and other hospitals were encouraged in a willingness to avail themselves of our products. Thus one large plant, centrally situated, is made to subserve the needs of the entire system in the manufacture of certain articles of supply. Primarily, the benefit to Utica is in the means of treatment, but, incidentally, there is a gain all round in the provision of well-made goods at the best possible prices. The total value of goods thus manufactured and sold, including printing and bookbinding, amounted during the year last past to about $13,000. There were made 3978 dozen hose valued at $3,179; 545 dozen combs at $409; 287 dozen brushes at $684; 35 mats worth $60; while from October, 1895, to October, 1896, the amount of printing and binding done aggregated in value the sum of $8,363. The important fact to be borne in mind is that, given the building, the machinery and the opportunity, there is no institution which could not do likewise. That the enterprise pays in dollars and cents admits of no question, but what is much more to the point is the payment in mental results. To find occupation of any kind for one's able-bodied patients is always an accomplishment,

but to empty one's wards of all but a few sick and feeble folk during the day is an *achievement* and one that is within reach of all who will earnestly make the industrial experiment. Therefore, I would respectfully commend the practice of New York in the matter of co-operation as well worthy of attention. It is, after all, a phase of the higher socialism of which we hear so much nowadays, the essence of which is co-operation, while individualism has as its underlying principle competition. The aim of this kind of socialism is the fulfilment of service. Institutions, by combining in any one State, can make themselves independent, in a large measure, of the mercenary middleman by manufacturing numerous articles of supply such as I have enumerated. And I am convinced that the policy is susceptible of the widest extension. If one hospital makes a specialty of workshops there is no reason why another, with a large farm, should not make an exchange of agricultural products, while a third might carry on a canning industry on a large scale. In institutions where it is not convenient to make clothing, a specialty might be made of that department in some other institution in the State. So, too, with shoes, caps, and the multitudinous articles that are needed by the insane. The pecuniary advantage of such an arrangement alone, to say nothing of its inestimable value as treatment, ought to commend it as a wise measure of economy. The State hospitals of New York, centralized as they are in administration, lend themselves admirably to co-operative methods. No one can fairly question the beneficent results of effective combination, and a doubting Thomas may be made to realize, by the patent facts of experience, that even a seat of State government may ultimately become, in one of its departments, a radiating focus of good-will and wise management. The latest experiment along these lines is to be the erection of a plant at the Manhattan State Hospital for the roasting of coffee and grinding of spices after purchase in bulk for all the hospitals.[5] Think for a moment what this means in a service that requires some 35,000 pounds of coffee per month. Presto! the middleman's profit vanishes to reappear in the cup in a form more acceptable to the patient consumer. So with spices.

[5] Since this paper was read the proposed coffee and spice plant has been erected at the Utica State Hospital.

Under this proposed arrangement pepper will be pepper, nothing else, mustard will lose in yellowness while gaining in pungency, and both will be wholesome, for in nothing is there greater fraud than in this matter of condiments. In all States where the insane are maintained as the wards of the State under State supervision, there would appear to be no practical obstacle to such co-operation save the selfishness of existing purveyors, and each year the ingenuity of superintendents would suggest new departures. And, by the way, do not beet sugar factories offer the opportunity to the asylum with ample land to grow sugar beets for conversion into, and exchange at the factory for, granulated sugar and utilization of the remnant for feeding stock?

One sometimes hears of the great difficulty experienced in some institutions in inducing patients to employ themselves. It is a difficulty that soon vanishes under the competent direction of an experienced supervisor who is in hearty sympathy with the medical staff in this department of his work. Once let work be recognized as an essential of treatment, and *vires acquirit eundo*. Others again dwell upon the danger of having patients near rapidly revolving machinery and dread the risk of sharp-edged tools. It is the same argument that one used to hear with reference to the disuse of restraint, the use of which made the restraint necessary. The lazy or conservative attendant sees an *a priori* objection to free employment in the closer supervision that the freer life involves. But let him once perceive the improvement in his patient's condition and he immediately becomes a convert to the new and humaner policy. Patients themselves are usually ready to escape from the ennui of their life in the wards and take naturally to work in the majority of cases, when they have experienced the new interests that occupation brings in its wake. The able-bodied patient sweats, and for him in return "the rich Arabia sweats her gums" in full reward for honest toil, the while the frankincense of hope and cheer displaces the gall and wormwood of a living death. "We grow weary when idle," said Boswell, to which Johnson replied: "That is, Sir, because others being busy we want company." Even so with the insane. The opportunity to work being, therefore, a privilege and bringing its special blessing in health, it has never seemed to me worth while to adopt the elaborate scheme of com-

pensation in vogue in some reformatories and in a few asylums, Broadmoor, for instance. Dr. Mercier[6] regards the absence of reward for labor as a crying evil, and has suggested the use of tokens or tallies which should be exchangeable at the asylum stores for such various commodities as are valued by patients. To do this would seem inconsistent with the theory of work as treatment, unless perhaps the insane, like children, are to be paid for taking their medicine like men. Rather, it seems to me, is *labor ipse voluptas*, and its *dulce lenimen* such recreation as is provided in all well-regulated hospitals for the insane. For, to conclude, although advocating the use of work to the fullest possible extent consistent with health and safety, I would preach moderation in all things, saying, with Prince Henry: "I am not yet of Percy's mind, the Hotspur of the North, he that kills me some six or seven dozen Scots at a breakfast, washes his hands and says to his wife, 'Fie upon this quiet life! I want work.'"

[6] Lunatic Asylums: their Organization and Management. Charles Griffin & Co., Ltd., London, 1894.

THE DEVELOPMENT OF THE HIGHER BRAIN CENTRES.[1]

By STEWART PATON, M. D.

The aim of this paper is to present in a general way some of the relations which the anatomical structure of the higher brain centres bears to the production of psychological phenomena.

The existence of an intimate association between cerebral structure and the manifestation of the various degrees of mental activity was recognized by Anaxagoras. That philosopher said: "If man is more intelligent than animals, it is because his mind employs more developed organs." This idea was current in the writings of many of the classical authors, but was first discussed in the writings of Hugo of St. Victor and later by Descartes, and finally was more clearly outlined and taught by Hume. The comparative method of investigating psychical phenomena is said by Lecky to have received a new impetus from the teachings of George Ernst Stahl. He has been called the founder of this method. On the other hand, the purely theoretical character of some of Stahl's speculations must be kept in mind. Psychologists and anatomists are, however, certainly indebted to him at least for the suggestiveness of his teaching. He even attempted a fusion of psychology and physiology. These views were also ably supported by Cabanis at the end of the last century. The doctrine that the genesis of psychological processes is intimately dependent upon the structure of the nervous centres has been clearly enunciated and expounded by Herbert Spencer. His philosophical analysis of this law of correlation demands the earnest attention of all those who are interested either in the normal manifestation of psychical phenomena as studied by the psychologist, or in the morbid processes which claim the attention of the psychiatrist. A single sentence epitomizes this author's teach-

[1] Read before the American Medico-Psychological Association, May 13, 1897.

ing: "It is a conspicuous fact that mental action is contingent on the presence of a certain nervous apparatus, and that, greatly obscured as it is by numerous and involved conditions, a general relation may be traced between the size[2] of this apparatus and the quantity of mental action as measured by its results."

Medicine has made no greater contribution to science than by emphasizing the importance of those facts which demonstrate the truth of Draper's statement, that there can be no psychology which is not founded on anatomy and physiology, and also that many of the problems of human psychology will become intelligible only by comparison with the facts deduced from the study of comparative psychology. The truth of this statement needs no demonstration. Structure and function are correlative terms, although in the history of psychology there have been periods when their close interdependence was doubted.

The term physiological psychology may be regarded as an unfortunate survival, for it implies an attempt to explain psychological phenomena in ways which are neither in accord with physiological laws nor directly related to them.

There exists a very close relationship between the anatomical development of the higher brain centres and their physiological expression of function. It is proposed to consider this relationship in its two-fold aspect. First, from the standpoint of phylogeny, and, secondly, but very briefly, in its ontogenetic importance.

The higher brain centres are developed from the telencephalon or secondary fore-brain, which reaches its greatest development in the adult life of the higher mammalia. The telencephalon is an outgrowth from the prosencephalon, or primary fore-brain, and is made up of elements from which develop the corpora striata, rhinencephalon and the pallium. The last may be defined as the portions of the walls of the secondary cerebral vesicle which are neither included in the olfactory tract nor in the basal ganglia.

In the cyclostomata and teleostei, the latter represented by the ordinary bony fish, we find the simplest form of the pallium. It

[2] The use here of the word size is unfortunate. Spencer explains at considerable length that complexity of structure, far more than size, is the essential point.

is, in fact, a persistence of the pure embryonal type, consisting of a single layer of epithelial cells, here and there thickened by glia. This structure may be said to represent the beginning of the cortex, and this type reappears in the human foetus. In the selachians, amphibians, reptiles, birds and mammals, this roof contains nervous tissue.

It is essential to examine these structural and functional differences more in detail, and to attempt by a careful comparison between the brain of a vertebrate without a cortex with the higher vertebrate brain, which has a fully developed one, to see if it is possible to define with greater exactness the psychological importance of the higher brain centres. Little has so far been done in this line of study, and doubtless in the future many valuable facts will be brought to light by investigations of this kind.

One of the brains which has been most studied and which does not possess a cortex containing nervous tissue, is that of the trout. As far as functional activity is concerned, this cortex may be practically disregarded, as it consists simply of epithelial cells. When we compare the lower brain centres of the trout with those of the higher vertebrates, it is seen that these centres are relatively larger in the fish. The size of the roof of the mesencephalon is very conspicuous. The magnitude of this portion of the trout's brain is not only interesting from a comparative anatomical standpoint, but it also throws some light upon its functions as a centre. Here the optic nerve ends, and here, also, are found fibres which connect this centre with the cerebellum, the medulla and the spinal cord. A system of fibres is also found which connects different parts of the roof of the mesencephalon, supplying an association apparatus which may, to some extent, be regarded as taking the place of an intracortical association system.

We also find other connections of importance, but the significance of the connections of the mesencephalon with the diencephalon is not so well understood. In this region in the trout, as in the higher vertebrates, we meet with a series of ganglia, as well as nervous tracts, the significance of which is not known. But it is not at all improbable that the anatomy and physiology of the diencephalon, as well as of the higher brain centres, will be better understood by studying the results obtained from careful comparative investigations.

The theory which was long ago advanced concerning the functions of the optic thalamus in man, namely, that to a certain extent it was independent of the higher centres, receives some confirmation from the consideration of its anatomical relations. Until the anatomical relations of the cortex to the thalamus are definitely known in detail it will not be possible to accurately determine many of the functions of the higher brain centres. The knowledge of the physiology of the diencephalon as well depends to a considerable extent upon the settlement of its structural relations.

In animals with a fully developed cortex, the thalamus, when considered functionally as well as from an anatomical standpoint, may be looked upon as an intermediate centre, interposed between the cortex on one side and lower centres on the other. Even in animals without a cortex, the connections of the diencephalon and mesencephalon with the lower centres are very complicated.

Not only, as has been stated, is the mesencephalon itself relatively larger than the corresponding portion of the brain of the higher vertebrates, but the connections with other tracts of the cerebro-spinal system are correspondingly greater. It is also apparent that the absence of the cortex is replaced by the relatively greater development of this centre and its connections. This is a significant fact, and may be made the starting point for investigations of great importance.

If an attempt is made to correlate the physiological function with the structural conditions of the trout's brain, it will be seen that sense impressions, such as sight and smell, may be transferred from the point of reception to brain centres, where they may be again transferred to other tracts, which are in connection with other more remote centres. It is also evident that a possibility of the association of one sense with another is anatomically possible, and although there is no cortex, an association apparatus of really great complexity exists. As far as is known, there is no reason why sense impressions may not be stored in these lower centres, thus constituting what is called memory. And not only that, but there is no valid reason for supposing that the brain of the trout is structurally unfitted for the performance of psychological acts of some importance.

One example will be sufficient to demonstrate what is meant.

The trout sees the red color of the artificial fly used by the fisherman. In other words, the *impression* of red formed upon the retina is conducted to the roof of the mesencephalon by the optic tract and there becomes an *idea*. The terms *impression* and *idea* are introduced with the same significance and limitations in which they were first used by Hume.

It is not altogether improbable that the power of receptivity of the nervous apparatus of the mesencephalic roof may be increased by the action of organic stimuli, such as those comprehended in the complex phenomenon called hunger. The various sensations of this complex phenomenon are conveyed to the central nervous apparatus by the sympathetic nervous system, where they may so awaken the latent receptivity of the nervous elements that the impression of red becomes an idea in the sense to which reference has already been made. The derived impulse, as it may be called in the absence of a better term, or the resultant of the association of the ideas "red" and "hunger," may be transferred to the various lower centres in the cerebellum, medulla and cord, and the result may be the spring of the trout toward the fly. The exact method of the transference and association of the primary ideas and the origin of the derived impulse is not the point to be emphasized, but attention is called to the anatomical complexity of the association apparatus even in the fish, and the correlated complexity of function. The assertion that the cortex is not essential for all degrees of memory is a theory which clinical experience does not altogether discredit.

As is now known, there is a considerable break in structural continuity in passing from the simple epithelial form of the trout's pallium to the comparatively simple, yet when considered by itself, really complex structural conditions of the amphibian mantle. In the amphibian brain, which, as Edinger has shown, closely resembles the mammalian embryonic brain, two distinct layers may, for the first time, be distinguished in the pallium: an outer layer, which contains very few cells, and an inner layer, which is particularly rich in cellular elements. It is interesting to note that Fulliquet first showed in protopterus, a species of mud fish, a point in the ventral portion of the pallium which was plainly connected with the inner cell layer. From this discovery dates the beginning of the study of the phylogeny of the cortex.

Viewed from this standpoint, the brain of the amphibia is interesting, but less understood than the reptilian brain, which has been studied by Meyer, Herrick, Brill, P. and S. Ramon y Cajal, and Edinger.

S. Ramon y Cajal first showed that the reptilian cortex contains essentially the same elements as the mammalian, but the arrangement was simpler and the number of individual elements less.

If we study the reptilian cortex more in detail, we find it composed of cells and fibres arranged in a certain definite way. The single elements are to be seen in the amphibian brain, but they are considerably fewer in number and less regularly arranged. In the reptilian cortex we find pyramidal cells, whose axis cylinders form a layer of varying thickness. A small number of these cells send their dendrites to the periphery of the molecular layer, branching many times before they end free. Some of the dendrites of these cells break up into numerous branches soon after their origin, but others form a thick network in the molecular layer which rests upon the cell layer, and into this region also penetrate fibres from other parts of the nervous system.

The tangential fibres which occur in the cortex of the mammalia are also present in considerable number and serve to unite the different cortical areas. Certainly in reptiles, and not improbably in the amphibia, we find a more or less complicated intra-cortical association apparatus. This is a most significant fact in its relation to the problems presented by comparative psychology. Even in this type of cerebral development, relatively simple as compared with the complexity of the cortex of even the lowest type of mammals, there exists an arrangement of cells and fibres which affords manifold possibilities as an association centre. As Edinger has shown, the distribution of this cortex is also psychologically of importance.

The cortical areas are connected with the olfactory tract, and are, phylogenetically, the oldest tracts which connect the cortex with the lower centres. The exact significance of this fact demands further study and offers a large field for investigation. Here in its simplest form is presented the anatomical relation of the higher and lower brain centres, a relation which is practically not understood in the interpretation of function, but it is one which it is possible to determine.

The problem may be briefly stated as follows: Is it, or is it not, psychologically important that by the appearance of the cortex certain functions are made more complex, and if so, in what manner? Does the cortex simply add to the complexity of the association apparatus? Does it add to the possibilities for the reception and storing away of sense impressions? And finally, does it permit the exercise of functions which cannot be justly compared with those of the lower brain centres? By carefully studying the functional differences of the brain of the trout and the snake, keeping in mind the possibilities presented by the difference of anatomical structure, valuable psychological data will be obtained.

The next centre in the cortex to be connected with the lower brain centres is the centre for sight, and that connection first appears in the brain of the bird. It is unnecessary to repeat in detail the facts which have so far been ascertained in connection with the optic centre as seen in birds; nor is it even necessary to repeat the attempts which have been successfully made to homologize the tracts connected with this centre in birds with the tracts connected with the optic centre in the human brain. It is sufficient to simply call attention to the appearance of this cortical centre and its connection with other centres.

The importance of a complicated optic centre for birds is evident when the bird's dependence on sight is considered, but it is not at all understood how the sight of fish is functionally different from that of birds. In the former, remarkably keen or sharp vision is present, without any cortical connections; in the latter the vision is also very acute, but the qualitative difference is not yet definable. Probably the difference is not one of degree only.

In studying the development of the higher brain centres in the mammalia, it is important to note, as has already been suggested, that the lower brain centres have undergone a process of retrogression, and it is not improbable that functionally, as well as structurally, the importance of the lower brain centres has diminished. The corpora striata in the higher vertebrates are relatively smaller than in the fish; on the other hand, we find the simple epithelial layer which forms the pallium in the fish, in the mammalia is represented by a structure of great complexity. The structural gradations which exist between the cortex of the

bird and the cortex of the lower mammals have not yet been carefully studied, so that no generalizations of importance can be deduced from the few facts which are known.

It has already been noted that the starting point of the cortex in the mammalia corresponds to the simple epithelial layer of the fish; but at a very early period in the former, nerve cells and fibres, as well as the neuroglia elements, are added to the epithelial structure. The development of the mammalian cortex is but imperfectly understood. No consecutive study of its early development has yet been made, so that it is necessary to look upon many of the views relating to the development of the mammalian cortex as hypotheses rather than facts. Little has been added to the discoveries of Kölliker and His. Kölliker showed in the brain of the rabbit that part of the cerebral vesicle which forms the cortex is composed of elongated cells arranged radially. At first, the cellular layer is divided into two divisions: an outer, which represents the gray substance, and an inner, from which the white substance is developed. This is the first disposition of the cellular elements. Later, three divisions may be noticed in the outer layer, an outer and an inner layer, which contain very few cells, and a middle layer, which is rich in cellular elements. Kölliker thinks that in the human brain the same arrangement of elements is to be found, and this arrangement is not improbably similar for all the mammalia. But many of the views relating to the development of the human cortex are simply inferences drawn from observations on the smaller mammalian brains. Reference is made to the ontogeny of the mammalian cortex, simply to show how the general characteristics of a certain structural type are common to all the vertebrates. During the development of the human cortex many structural conditions corresponding to those seen in the adult brains of the lower vertebrates may be noted. Few morphological problems present themselves that more forcibly recall the truth of the closing line of Darwin's Descent of Man—"Man still bears in his bodily frame the indelible stamp of his lowly origin."

Reference will only be made to those facts in the structure of the mammalian cortex which have what may be termed a more immediate psychological importance. The external conformation of the cortex will not be considered for two reasons: first,

because the subject is too large a one to treat of even in a limited way; and, second, because the external conformation of the cortex is only of secondary importance. The external form of the cortex does give, but only in a general way, some evidence of the complexity of the internal structural conditions. This fact was at one time given undue prominence, and although the usefulness of this line of study is not to be underestimated, still it should be kept in mind that the essential point relating to the production of psychological phenomena is the arrangement of nerve cells and fibres.

As has been already pointed out, the development of the mammalian cortex is imperfectly understood. Most of the views regarding both its phylogeny and ontogeny are conflicting, and its history, as described at present, is disconnected. Many important facts will doubtless be brought to light by the comparison of the cortex of the lower mammalia with the cortex of the higher apes and of man.

The following structural characteristics may be considered typical of the adult mammalian cortex. Cajal has shown that four layers are present in the cortex of all the mammalia. The first, or most superficial layer, is the molecular layer, then two layers of pyramidal cells, small and large, and finally the layers of polymorphous cells.

I. In the molecular layer are to be found three types of cells: 1st, fusiform cells, whose longest diameter is in a horizontal direction. These cells give rise to two protoplasmic prolongations from their opposite poles. The terminal filaments of the prolongations finally end in the most superficial part of this layer; 2d, the triangular cells, and 3d, polygonal cells. The physiological significance of the individual elements is not known, nor is it definitely known how constantly each element recurs in the cortices of different animals.

The fibres found in the molecular layer are derived from three sources: they are either, first, the axis cylinder prolongations of the cells of the molecular layer; secondly, prolongations from the cells in the pyramidal layers, or, thirdly, they come from more remote portions of the nervous system.

II. In the second layer are found the pyramidal cells. The pyramidal cell is found in all vertebrates above and including the

amphibians. In the fish, it is said the pyramidal cell does not exist; possibly its prototype may yet be found. It is not essential for present purposes to describe the pyramidal cell in detail with its various processes. In the lower vertebrates the protoplasmic expansions of this cell as compared with those in the higher vertebrates are greatly diminished in number and probably in length. In the batrachians the ascending protoplasmic process ends with the terminal branching, but no lateral branches are given off from the main stem. In reptiles the basilar expansions are reduced to one prolongation, and the termination of the ascending branch is as simple as it is in the batrachians.

III. In the human cortex at the time of birth, and for a considerable period afterwards, the protoplasmic expansions given off from the base are very short and have few branches. It is probable that the growth of these prolongations continues even to adult life. It is said that in imbeciles a reversion to the simpler type of this cell has been observed, with a corresponding decrease of the protoplasmic processes. These may be considered as the fundamental elements of the association apparatus. According to Cajal, mental activity stimulates the development of these processes and so increases the complexity of the system of nerve collaterals, not only by strengthening the formation of the associations already existing between certain cell groups, but by actually forming new connections by the expansion of the collaterals. It is certainly an ingenious theory of Cajal that he offers this anatomical explanation for cases of atavism or hereditary talent, depending upon the *non-transmission* or *transmission* of these new connections. Considered biologically, the theory presents most serious objections. Although the fundamental truth of John Morley's statement is still true, that "genius must always remain an inexplicable gift," it is not too much to say that even now the mechanism of the apparatus by which it expresses itself has been studied with gratifying results. It is strictly in accordance with the deductions made from anatomical facts to say that the number and extent of the protoplasmic branches of the pyramidal cells are directly related to mental activity. The belief that the study of the morphology of the pyramidal cell alone is all that is essential in the comprehension of the anatomical conditions upon which thought depends is absurd.

IV. The fourth layer. Polymorphous cells. Here are to be found two distinct types of cells, the so-called sensory or association cells of Golgi, and, secondly, Martinotti's cells, characterized by an ascending axis cylinder. The fibres to be found in the cortex are classified under four groups: 1st, the projection fibres; 2d, commissural fibres; 3d, association fibres; in men or the higher mammalia these fibres form the chief part of the white substance of the hemispheres; 4th, the centripetal fibres, which represent probably the termination of the sensory fibres, or at least the cortico-thalamic neurons. In reptiles, as well as the mammalia, many of these fibres may be traced through the gray substance to the molecular layer. This is a significant fact, showing that very early in the animal series this layer has assumed considerable importance. In considering the mammalian cortex as a whole, it is impossible to say that it possesses among its elements any one that is characteristic of its functional importance. This is true both of the cells and the fibres, as well as their arrangement.

As yet nothing distinctive of increased psychical activity has been discovered in the minute structure of the cell. The works of Kölliker, His, Waldeyer and Van Gehucten have shown that it is impossible to attribute any great psychological importance to single elements. It is certainly unfortunate that the pyramidal cell has been called "the psychical cell." This cell does not exist, as has already been stated, in the fish, but it cannot be doubted that the fish possesses some degree of intelligence, although this has been denied. The pyramidal cells doubtless have some relation directly or indirectly to the production of thought, but it is not yet possible to so define their function as to be justified in calling them psychical. Only in a few instances may it be said that the volume of a cell is proportional to its functional development. The reverse is often true. Only in a few instances does the volume of a cell bear any proportion to the size of the animal, as, for example, the chicken has a larger pyramidal cell that the sparrow, but no functional or even structural superiority may be inferred from this. Neither can inferences be drawn from the arrangement of the cytoplasmic constituents. The question whether certain cells give rise to some specific form of energy is still under debate, and is probably true

only in a limited degree. The limitations cannot yet be defined. Neither is the theory tenable to assume that the extent of the interval between the pyramidal cells in different animals may have some psychological importance. Leaving the consideration of the histological elements, it may also be said that it is not possible, except in a general way, to infer the psychological possibilities simply from the arrangement of the cortical centres. In man the association centres reach their greatest development. Flechsig's statement that they disappear entirely in the lower mammalia must be considered debatable. In the higher apes the association centres reach a development equal to the projection centres.

These few facts are really all that is known concerning the phylogeny of the cortical areas. If the endeavor is made to define the exact structural conditions upon which the functional superiority of the human brain rests, it may be said that only two facts are characteristic of increased functional activity: 1st, the greater development of the protoplasmic processes of the cells, and 2d, the complexity of the association apparatus as a whole.

It is not possible to refer to Cajal's theory of the psychological importance of the neuroglia, except to say that whether it is true or not, it rests upon a series of assumptions relating to the structure of the neuroglia, the truth of which has not yet been demonstrated.

When considered from a phylogenetic standpoint, it is seen that the structure of the single elements composing the higher brain centres as we ascend from the lower to the higher vertebrates, as well as the relation of these elements to each other, tends towards a gradually increasing complexity. This must be admitted as a fundamental postulate, and the truth of which depends solely upon recognized anatomical facts. If this axiom is kept in mind, the vagaries of certain histo-psychological theories become so apparent that they may be passed over without further notice. Even a cursory examination of the phylogenetic facts shows that it is unnecessary to attribute to certain nerve cells some specific form of action to account for increased psychological function. To give undue prominence to the supposed specificity of certain cells, such as the ganglion cells about the calcaric fissure, is to ignore the relative importance of other anatomical facts,

such as the possibilities of associative action between individual cells on the one hand and groups of cells on the other. At present it is neither possible to affirm, nor even deny, with certainty, that certain cells have the property of exhibiting specific forms of energy. The higher cerebral centres must be considered as a complex whole, and if it is eventually demonstrated that the elements of the various cortical areas differ from each other functionally as well as structurally, this fact will only be a subsidiary one in the explanation of functional differences. Beginning with the lowest vertebrate and ascending the scale to the highest type of mammal is found a varying but progressively complex type of cerebral structure, with which is correlated increasing functional activity.

Phylogenetically as well as ontogenetically, the main fact is apparent that the cerebral structure *as a whole* becomes more complex. Upon no other basis than the acceptance of the truth of this axiom can a comparative psychology be safely founded. Unfortunately, the failure to recognize the importance of this fundamental proposition has resulted in the absurd attempts to found a histo-psychology, of which mention has already been made.

Meynert's theory that the higher brain centres may be regarded simply as an apparatus for the reception, arrangement and association of impressions is, with a slight modification, consistent with the acceptance of anatomical facts as they are now known.

The structural relation of the higher and lower brain centres has been made plainer by the study of the phylogenetic history of these centres, and some light has already been thrown upon their relative functional importance. The exact relation these centres bear to the varying degrees of consciousness is not yet determined.

The medical profession has made no greater contribution to science than the impetus it has given to the newer and more rational study of psychological phenomena. It is a matter of some importance that members of this profession have been engaged in the search for facts relating to the parallelism which exists between structural conditions and functional phenomena, while more than one school of philosophy has been guilty of endeavoring to arbitrarily limit the parallelism by so-called facts "evolved from the inner consciousness."

PSYCHOLOGY AND PHYSIOLOGY.[1]

By HERBERT NICHOLS.

It is not the purpose of this paper, as to many its title may suggest, to draw sharpening lines of demarkation between psychology and physiology. The unity of all knowledge is to-day so obvious that no man of true instinct is likely to waste time in drawing scholastic limitations between any two sciences. Rather is it my purpose to plead that as near together and even overlapping as physiology and psychology now are in some ways, yet in others they are too widely apart. They overlap in subject-matter; they are too widely apart in points of view, in practical touch and in working support. The wish underlying all that I shall say has everywhere for its burden that the borderland between the two sciences be made clearer for both, and be occupied in more intimate and helpful relations. In this spirit I beg that I may be permitted to range over this common ground, now touching upon general subjects, and again upon specific problems.

For a beginning, it will prove wise to give attention to certain historical considerations. There are some reasons why we may study the historical relations between physiology and psychology with special care. I need not, in this age, remind any one of what the world owes to science. And if, instead, I emphasize a little the contributions which science has received from early studies of the human mind, I shall do so in order to bring to view certain evil inheritances which have crept in and come down to modern science therefrom—this, rather than to magnify the good that has come along with them.

By way of appreciating both the good and the bad, one may begin by realizing the bulk of the subject-matter now belonging

[1] This paper was one of a course of six lectures, on "Modern Psychology and its Bearings," delivered by the author, at John Hopkins University, in March, 1896.

in common to physiology and to psychology. Taking down Foster's latest edition, we find one-half of the entire four volumes, 772 pages out of 1556, devoted to the muscles, nerves and sense organs; and every word of this must now be considered to be the indispensable property alike of both sciences.

Having measured this bulk, we may observe of this great text-book how continually its pages involve psychological assumptions, data and explanations. Scarcely can we read a dozen lines without running upon some "sensation," "perception" or "feeling" "worked in the mind" by some physiological organ, or upon some physiological organ "reacting to" some sort of "mental occurrence." If in a thoughtful mood, one cannot read far without being struck with how impossible it would be to construct a science of physiology without psychological terms and conceptions.

Bearing in mind, therefore, how the bulk of physiology is thus permeated through and through with psychology, got from somewhere, let us now glance at certain events which have influenced the development and dissemination of psychologic science everywhere. Previous to the dawn of modern science the study of the human mind had been a favorite occupation of some of the profoundest men the world has produced. We may to-day reject their conclusions and their methods, but we do ill to neglect their influence upon their times and upon the conceptions inherited from those times. A pretty complete outline of psychologic theory was accomplished by those men. That it was not an entirely sound and successful system is well known. Yet what happened when the epoch of modern science came was something as follows: When the significance of the brain as the basis of mental phenomena became comprehended and the old doctrine of soul faculties was consequently thrown over, the old psychology was not so much thrown over with it as taken up bodily and transferred, good and bad together, to its new physiological basis. It is remarkable, upon examination, how little new psychology was really created in this early transitional epoch, and how few fundamental changes were made in the old. The whole energy of psychologists and of physiologists alike was exhausted in mere readjustment; and we can well imagine that much of this work was clumsily and carelessly done.

At that stage of history, physiology and psychology stood on the same basis of psychologic theory. Soon, however, great events happened that affected our two sciences in markedly different ways. First came the burst of metaphysical speculation which spread through Berkeley, Hume, Kant, Fichte, Schelling, Hegel, Herbert, Schopenhauer, Lotze, etc. Then followed the Darwinian epoch of science, culminating in our present evolutionary theories. The metaphysical epoch affected physiology and general science little; and we find them to-day throughout the enormous volumes of their production, using, for the most part, the same terminology and metaphysical conceptions that prevailed in the middle ages. Both epochs, on the contrary, influenced psychology profoundly. The new flood of metaphysical analysis demonstrated that the ordinary assumptions regarding body and mind are fundamentally inadequate; and post-Darwinian science forced a revolution equally far-reaching regarding their biologic relations. In consequence of all this, much conflict and misunderstanding have arisen between psychology and general science, including physiology. Psychology, finding itself without any adequate working hypothesis, has been forced to consider its fundamental problems in such a manner as gives to its current work precisely that speculative aspect which followers of the more settled sciences above all else abhor. From this so-called "speculation" the other disciplines draw back, declaring that it is wrong in spirit and is not true science.

With these things in mind, we may now approach the crux up to which they have been leading from the first. No class of men have been more zealous in expurgating from their science the false notions which scholasticism and mysticism held of it, than physiologists. But if the physiologists, through a desire to be "soundly conservative," now feel bound to draw back coldly from present psychological work because of its "speculations," we are forced to consider what sort of psychologic conceptions they are to which this conservatism chains their science the more closely. Plainly, they will be those which physiology prevailingly now holds, and which have come down to it traditionally from the middle ages: the same "speculative and pseudo-philosophic obfuscations" from which psychologic science has been seeking to free itself for two centuries. It may be that this

Herculean effort of psychology has not yet culminated in entire success; yet the physiologist should well consider whether he is wise in wholly ignoring the residuary influence of two hundred years of profoundest struggle for basal truths which the world has known. Also, he should consider whether his shrinking back into the metaphysical assumptions of mediaeval times is likely to prove essentially the sort of shrinking from "foolish" metaphysical speculation which he, at heart, intends.

We must not be content to view abstractly this danger of tying down modern physiology to these crude and primitive notions of psychology; and we must therefore now press on to witness concrete instances of the harm which such a course already has brought us.

To this end I propose to examine a group of subjects for which the words "visceral sensations," "emotions," "instincts," "subconscious processes" and "personality" may, in a measure, prepare the reader, and which, though they may seem, as thus strung together, to have no mutual relationship, yet I shall hope to show they are, in common, beset with a round of false traditions, tangled one with another, in a way fairly exampling our subject in hand.

I have spoken of the attitude taken by many scientists against current psychology. Nothing is more common than a certain sort of rank censure of the attempts of modern psychology to grapple with its elementary problems in a way necessitating closer speculation as to the relations of mind to body than physiological text-books have yet been driven to consider. In Dr. Charles Mercier's recent book (1895) on "Sanity and Insanity," we have an example of this, which, from the eminence of the author, and from the unique relationship of his profession, as an alienist, both to psychology and to medicine, serves admirably for our present purpose. In laying down the foundations upon which he is to build his views of insanity, we find this distinguished author declaring as follows (p. 47): "In the first place we must discard altogether the notion that mind can work upon, or influence, or produce changes in the nervous system, or in matter of any kind, however arranged." And, similarly, he "discards" the influence of neural activities on mental activities, going on to object, facetiously, to the idea of "putting beefsteak into a sausage machine and pulling out a sonata"; and to striving to imagine a thing that is "partly an iron bar and partly a smell of paint."

Now, as a matter of fact, precisely what does happen, miraculous and impossible as it may seem to Dr. Mercier, *is* that we are continually putting beefsteak into our sausage machine and pulling out sonatas and effects of that kind. Nothing but the superstitious traditions of primitive ignorance should blind any sober scientist to this fact. Modern psychology is bravely endeavoring to find how the trick is done, and has, I think, fair chances of success; possibly through giving Dr. Mercier a more correct notion of what a beefsteak really is. Be that as it may, this tirade is an example of my point in hand. For confessing that we do not yet know the ultimate nature of mind or body, I must remind Dr. Mercier that the assumption which he positively and unhesitatingly makes is nothing more or less than a specimen of the crudest metaphysical speculation that has come down to us from scholastic and pre-scholastic times.

I have not space here fully to point out the results of Dr. Mercier's rashness in his own book and in his department of science, interesting as this would be. I shall have occasion later to note a single item. But we can, here and now, compare his method with the magnificent judiciousness of Dr. Foster toward the same subject. Already we have had occasion to speak of the bulk of psychology to be found in Dr. Foster's pages. Yet throughout all his four good-sized volumes I do not find a solitary passage wherein he does not take for granted, and as fundamentally assumed, that mind and body *do* causally interact and "influence" and "produce changes" mutually in each other, all quite as Dr. Mercier declares we must not do. Constantly he speaks of stimulations that "determine" sensations, or "give rise to," or "affect," or "cause changes in" them. Always a causal relation between body and mind is directly involved in the language used. Moreover, it would have been absolutely impossible for him to have written his work on physiology without having taken this for granted. It is all very well for one to carry on an abstract metaphysical argument about the "absolute disjunction" of mind and matter and the "impassable abyss" between the two. But let that same person undertake to carry out his hobby concretely by rewriting Dr. Foster's text-book and he will give up the job very soon. Simply, he could not write a page intelligently *without* making the very assumptions blindly that Dr. Mercier arraigns

the psychologist for striving to make with clear knowledge. The harm which such men as Dr. Mercier—and they are many—do in their science by their own inconsistency, and still more by their denunciations of others for attempting to do what plain common sense demands all science should always do, is, I assert, a concrete example of the evil of which this paper treats.

It is my declaration that physiological text-books are full of scholastic traditions which not alone mislead science from its larger needs, but also mislead her in details and in her practical problems. Let us now examine some of these latter at even closer range. Few things have struck me more forcibly of late than the extraordinarily good psychological work being done among alienists. Yet I continually note in it certain peculiarities. A part of this work is so fresh and suggestive that I know at once it has come from new and direct observations in one of the richest of fields. Another part of it, however, makes me groan with humiliation to think that it must have come, at some time, from some psychological text-book, and that psychology ever could have been so bad. Now in these reports I have been much impressed with the prominent rôle given by these alienists, in their treatises on insanity, to so-called "coenaesthesic" affections, and regarding them you will permit me again to quote from Dr. Mercier, p. 92:

"Roughly speaking, there are four groups of viscera which are sources and receptacles of the nerve currents which correspond with the coenaesthesis. These are the heart, the lungs, the digestive organs, and the genito-urinary organs; and a morbid change occurring in either of these groups imparts a special character to the nervous currents proceeding from it, and is attended by a special modification in the coenaesthesis. Thus the special alterations of consciousness that attend disease of the heart is a tendency to anxiety—to active terror. When the lungs are diseased it is said that there is a tendency for the cast of mind to become joyous, and it is certain that the apprehension of danger and sense of ill-being are often insignificant in comparison with the gravity of the disease. Affections of the bowels are invariably attended by mental depression, by melancholy and wretchedness, more or less acute and profound, and this is the case whether or not the patient recognizes that he suffers from such a disorder. In affections of the genito-urinary apparatus, in addition to the feeling of illness common to all maladies, there is an irritability of temper, and often an hypochondriacal attention to the disease, which is peculiar to disorders of this class."

Our attention is the more attracted to this from the dominant interest just now being given to visceral feelings, by psychologists, as the basis of our emotions generally. It may be recalled that psychology almost universally has separated mind into three ultimate divisions—Will, Intellect, and Feeling. Until three or four years ago all emotions, and all feelings agreeable and disagreeable, were conceived to be reduced, in accord with this orthodox plan, to pleasure and pain (Sully, 1892). In the last three years no subject of psychology has been more radically overhauled. And the old notion has been so sharply criticized that I think Prof. James voices the best opinion of his day when he declares of the traditional "pain and pleasure" doctrine that "it is one of the most artificial and scholastic untruths that remain to disfigure our science."

While this old doctrine has been thus shaken, no constructive explanations have been offered in its place that have been given anything like common acceptance. One theory, however, has been offered which undoubtedly is full of pertinent suggestion, if not satisfactory throughout. This is the James-Lange theory, which bases emotions on the "reverberatory feelings" which rise from our muscles and viscera during emotional excitement; that is, upon the sensations that come from our muscular activities exercised in *expressing* emotion, and the visceral sensations accompanying these acts. As Prof. James states it, "we do not laugh because we are happy, but are happy because we laugh"; the emotion rises from the visceral and muscular activities, rather than gives rise to them.

Such doctrine, coming from such high authorities, and coincidently with what the alienists tell us about these same visceral occurrences, must of necessity rouse our interest. Wishing to know what our standard physiology has to say regarding visceral sensations, let us turn again to Dr. Foster, IV., p. 282:

"In respect to all structures other than the skin and nerves, to such structures, namely, as muscles, tendons, ligaments, bones, and the viscera generally, there is a large amount of experimental and clinical evidence showing that, so long as they are in normal condition, experimental stimulation of them does not give rise to any distinct change of consciousness; a muscle or a tendon, the intestines, the liver or the heart, may be handled, pinched, cut or cauterized without any pain, or indeed any sensation at all being felt, or any sign given of consciousness being

affected. Nevertheless when the parts are in an abnormal condition even slight stimulation may produce a very marked effect in consciousness. If, for instance, a tendon becomes inflamed, any movement causing a change in the tendon, especially one putting the tendon on a stretch, will affect consciousness and give rise to a sensation. *But the sensation is one of pain, and not of any other kind.*"

The impulses which Dr. Foster speaks of as "continually passing upward from the viscera" (p. 283), end, therefore, in pain and in pain only. At once we begin to suspect that, at the very least, there is something quite irreconcilable between this "common sensibility" of Dr. Foster and that of the alienists of the James-Lange school of psychology, and of history. Certainly joy and similar emotions cannot be explained on the basis of visceral sensations if physiology finds the viscera capable alone of pain.

We must examine, therefore, what evidence Dr. Foster offers for his semi-heretical views. All the more shall we be interested in doing this from the fact that, since the writing of Dr. Foster's latest edition, the theory of pain which he deduced, as above, from the old doctrine of "general sensibility," has been laid under wide suspicion and the doctrine of specific pain nerves exalted to strong probability in its place.[2]

If the coenaesthesis of history is turned into pain by Dr. Foster, and proven to rest on pain nerves by weightily accumulating evidence, not only will the running-aground of this hoary doctrine be interesting evidence of how mediaeval psychology has played mischief with the most learned and cautious physiologists of our day, but also our curiosity will be enlivened to see what may be the influence of the tradition in the psychic theories of Prof. James and of Dr. Mercier.

Of course, Dr. Foster had heard of the doctrine of pain nerves when he wrote his book. But so little heed did he give it that he dismissed it in a single sentence, remarking "that such a special mechanism [as pain nerves] has been preserved, but unused, through whole generations in order that it may once in a while come into use [when we have pain] is in the highest

[2] See article in Brain, p. 1, 1893, and p. 339, 1894, by Dr. Henry Head, of University College Hospital, London. Also articles by Prof. von Frey in Berichte d. math.-phys. Classe d. Königl. Sach. Gesellschaft der Wissenschaft zu Leipzig, 1894, pp. 185 and 283; 1895, p. 166.

degree improbable." The incomparable looseness of this remark in the mouth of Dr. Foster becomes apparent when we consider that if constant use be necessary to the preservation of nerves, then he could just as well conceive the pain nerves to be employed with the obscure impulses which he declares are "continually passing upward from the viscera," as should his own basis of these impulses, whatever he conceives that basis to be, and which he has neglected to name. But neglecting this, we will pass on to examine the direct proof which Dr. Foster offers for his peculiar opinions (p. 283):

> "We are in a certain obscure way aware of what we may call the general condition of our body. To put an extreme case, if the whole of our abdominal viscera were removed we should be aware of their loss. We should be aware of this through more ways than one. The tactile sensations from the abdominal skin would be in such a case different from the normal, and moreover the muscle sense of the abdominal walls and of all the muscles whose actions bear on the abdomen would make us aware of the void. But beyond all these indirect ways, it is probable that we should in a more or less obscure manner be directly conscious of the loss. It is probable that sensory impulses, not of the character of pain, are continually or from time to time passing upward from the abdominal viscera to the central nervous system. These do not affect our consciousness in such a direct manner as to enable us to examine them psychologically in the same way that we are able to examine special sensations, such as those of sight, or even sensations of pain; nevertheless they do enter, though obscurely, into our consciousness, so that we become aware of any great change in them, and they have been spoken of under the title of 'common' or 'general sensibility.' . . . When they do assume such a magnitude or intensity as to break in upon consciousness, the change of consciousness which they produce is of the kind we call pain," etc., etc.

Now note the confusion! Dr. Foster tells us explicitly that pain is not an exaggeration of pressure nor of temperature sensation (p. 282); that "general sensibility," pressure and temperature sensations are three separate kinds of sensations (p. 283); that "general sensibility," before it becomes "excessive," is "not of the character of pain" (p. 283); and that when it becomes so "excessive" that it breaks in upon consciousness sufficiently for us to become aware of it, then it is pain (p. 284). Surely it is anomalous for an impulse to be of one class of sense quality before it rises above the threshold of consciousness, and of another kind

as soon as it does this. It is anomalous, also, to speak of an impulse becoming "excessive" before it rises above the lower threshold (p. 284). What obfuscation, then, it is to declare that a sensation is not pain while "in consciousness" so obscurely that it has not yet reached "intensity" enough to break in upon consciousness sufficiently for us to be aware of it; and that then it is pain!

Dr. Foster should have unusually strong proof for sensations that are so obscure and that so violate all known analogies. But what becomes of the proof offered by him, when examined closely?—and here rises the point that particularly concerns the subject of our present paper. He offers, first, that this general sensibility has "*been spoken of*" *in traditional psychology*, and secondly, he offers the purely psychological conjecture that, "to put an extreme case," we should *probably* be directly conscious of the loss of our abdominal viscera if they were wholly removed. If we scrutinize this last point we may note of it, first, that a man is not directly aware of the loss of an amputated limb, but often feels it, after it is gone, precisely as if it were there; thus while Dr. Foster credits "general sensibility" to the limb as much as to the viscera, we are here absolutely certain that the loss of "general sensibility," if such exist, does not make us directly aware of the loss of the limb. Again, it is well known that after the removal by surgery of a kidney, or of other considerable portions of the viscera, one is not directly aware of the loss, not more than we are of their presence commonly and during health. And this, taken with "the large amount of experimental and clinical evidence" cited by Dr. Foster to the effect that experimental stimulation of the normal viscera does not give any sensation save of pain only, and with the well-known fact that pain generally is of itself incapable of giving us knowledge of the parts whence it rises, all this makes extremely doubtful if we should be aware of the loss of the whole viscera *except* through the indirect ways mentioned by the learned author. And finally, the combined facts that pain has now been proven to rise from specific nerves and *not* from "general sensibility," and that there is no reason whatever to believe that these obscure threshold beginnings of pain are anything but obscure and feeble pain, all these facts taken together and in the light of common analogy

with the specific origin of all other sensations, now render it entirely improbable that there is any such thing as "general sensibility" apart from our ordinary senses; rather they show it to be probable that Dr. Foster himself has been misled, in accord with the main thesis of this paper, in attempting to rehabilitate this departing myth of prehistoric physiology, for upon examination it can now be clearly shown that these traditional notions regarding pain and "general sensibility" are but the survived remnants of early, crude metaphysical speculation.

But what, then, of the "visceral feelings" of the alienists and psychologists! The truth is, there is quite another side to all these things, and one which we must consider if we are to find reconciliation for the mingled truth and confusion of tradition. A concrete illustration may help us to this new point of view. Hunger and thirst are commonly given in physiological textbooks as marked and typical examples of "general sensibility" [so in Foster]. On the other hand, impulses to satisfy hunger and thirst have always been set down as instinctive. Now, the feelings of hunger and thirst themselves prompt to the same sort of conduct as these so-called instinctive impulses. Indeed, it seems possible that the same inner core of the psychic happenings which, in the one case, is regarded as a visceral feeling, may be identical with that which, in the other, is named an instinct. What, then, should result if, instead of conceiving the inner core of the feelings of hunger and thirst to be the counterparts of certain visceral currents running *to* the brain, we should turn squarely about and regard them as motor ideas seated congenitally in the brain and let loose *from* it to prompt the creature to specific conduct for getting sustenance? Unquestionably our attitude of investigation of these matters would be revolutionized and a wider horizon would be given to the problem. We should now expect these instincts to be aroused in more than one way—by smell, by sight and often by sound, *as well as* by a condition of the stomach. Moreover, since in cases of instinctive impulses aroused through sight, for example, of an animal at sight of its prey, we should think it ridiculous to seek an explanation of these instincts wholly in the eye, so we should now be led, perhaps, to recognize how faulty it has been for physiologists to seek an explanation of hunger and thirst wholly within the viscera.

Where an instinct is prompted by sight it is said to be aroused through association fibres. Undoubtedly the psychic state in question becomes *associated* with quite different thought-pictures under different conditions, and according to the sources from which it is aroused. Sometimes it is associated with certain conditions of the body, and sometimes with the scenes and events common to conduct for satisfying those conditions. But every tyro of psychology should know that, stripped of these associations, the inner core of these psychic occurrences would be absolutely indistinguishable from each other, and in the one case would no more give us any idea of our viscera (or of their loss, as Dr. Foster suggests would happen from general sensibility) than in the other they would give a wolf an idea of a fine fat sheep, or would give a dog a *sight* of his mistress' kitchen.

Of course the mere turning to this wider view would not, of itself, solve all the mysteries of hunger, nor illumine beyond a shadow all the realms of physiology, of insanity and of emotion. But it would bring light into all these regions. It would enable Dr. Foster to clear up many of the perplexities regarding hunger and thirst which he sets down confusedly in his book. It would enable us certainly to understand how "herbivora and other animals, whose stomachs are commonly more or less full," should yet feel hungry at the sight of food. It would enable us at least to imagine how hunger from an empty stomach may be explained in different ways and yet in conformity with the conclusion that the viscera give no direct sensory currents save of pain from pain nerves, and of muscle-sense from muscular contractions. It *may* be that the mere emptiness of the stomach, or, again, the undue presence of its juices, incite muscular and peristaltic disturbances of such persistency or strength that they force their way, let us guess, to some part of the Rolandic region of the cortex, and thence arouse by association the proper instinctive feeling of hunger, together with their own more immediate muscular feelings. Or in place of muscle-sense, it may be that obscure and feeble pains are commonly the only direct visceral sensations, and these, rising by pain nerves to some yet undiscovered pain centre of the cortex, spread thence by instinctive associations, as we conceived in our foregoing conjecture. Or a continued lack of food may, at times, complicate the

feeling of hunger through the blood; that is, in effects upon the nervous system generally, and similar to those experienced in fainting. Again, all these things may be brought into line with the fact that long-continued hunger may be lessened and apparently satisfied by injection of food into the bowels. Not being a physiologist, I am incapable of saying how these things shall eventually be explained. But of this I am sure, that when physiology shall rise above the traditional psychology of mediaeval times, then will it, and psychiatry and psychology, alike receive enriching inspiration in many fields as a consequence. It is a small matter how hunger be explained—whether as visceral sensation or as instinctive motive—but the collateral issues are momentous. They are momentous in psychology,[3] and within the sphere of the alienist it must be more profoundly fruitful to his understanding of the maladies which Dr. Mercier treats, to study them as functions of the brain parts which

[3] Lest it be thought that I have too much emphasized a trifling matter, I may here note that psychologists to-day are being driven into two schools. One, the Kinaesthetic School, inclines to look upon all motor ideas and upon all emotional feelings as *results* of muscular and visceral activities, and to disregard the sensory side of the instincts altogether. The other, the Instinctive, or as it has been more often called the Innervative School, turns all this squarely about and looks upon the cortex as lying in the *primary* road to muscular activity. A dispute can be hardly too much emphasized which thus sets Will, Feeling and Instinct upon such opposite constructions.

As a final word regarding "general sensibility," I remark that, as any one who has examined the physiological text-books of the last three hundred years may have noted, it appears always to have been the custom of these authors to tell all that was definitely known about our "five senses," and then to drop all that was surmised but not definitely known concerning the multitude of our other bodily sensations into the fathomless doctrine of general sensibility. As pressure, touch, heat, cold, muscle and joint sensations have each, in turn, been fished out of the common receptacle, the remainder has as often been left, as of old, disposed of by continuing a name. At the time of Dr. Foster's last writing all had been rescued but pain. And with pain now set on common footing with other sensory processes, it would seem well hereafter for physiology in disposing of hunger, thirst, nausea and such complex processes as are not yet understood, to tell only what is known regarding them, and then to drop the subject without hiding it under a mere word which is sure to deaden research and to mislead in many wide and depending fields of science.

most deeply underlie the foundations of our mental superstructure, than to regard them as the superficial effects of visceral disorders.

When in the beginning of this paper I strung together the phrases "visceral sensations," "emotions," "instincts," "unconscious and sub-conscious processes" and "personality," there was little apparent relationship between them. In the light of our general subject I hope I have now said enough to suggest the cogent relationship of them all, and to enable the reader swiftly to connect the little I have left to say, regarding the last three, with what has gone before. The current notion, common even in science, that instinctive conduct is unconscious conduct, is one of the grossest and most characteristic superstitions that has come down from the past. It reached its climax, in Descartes, with the doctrine that all animals, save man, are absolutely unconscious automata. Gradually this declined into the belief that only the instinctive acts of animals were unconscious, it yet being held that animals lower than man are mainly instinctive, and that man is little, if at all, so. To-day we have got so far as to recognize "that man has more instincts than any other creature." Yet the superstition that instincts are unconscious is still of such subtle influence, that while leading psychologists may assert the contrary in the few perfunctory remarks which they commonly devote to instincts in their text-books, yet they do this in a manner so "rootless and branchless," and so detached from their systematic expositions of will, feeling and intelligence, that it remains true that there is no treatise of psychology extant in which instincts play any fundamental rôle, or one proportional to their biologic and psychologic importance.[4]

The relation of instincts to attention, to "the motor problem," and, indeed, to the entire functions of mind, is so obviously fundamental to every one who but soberly considers the matter, that I need not dwell upon it here. Also, I have said enough regarding instincts as the fundamental source of explanation of hunger and like phenomena, to make plain that they are of

[4] This, too, in face of the obvious suggestion that the cortex, the accredited organ of consciousness, is likely to be the seat of congenital traits, and to play a dominant rôle in instinctive processes, proportionally to its size and importance over other ganglia.

practical interest to the physiologist. Yet I cannot better reinforce my accusation of the practical harm done by the ancient superstition that instincts are unattended with consciousness, than by showing its misleading influences in neurology. It is even more important to discover the detailed functions of our cerebral nervous mechanism than to untangle its anatomy. This work must largely depend upon our psychological interpretation of these functions. If we start out with false preconceptions of their psychology we are sure to be misled. The notion that the neural basis of all conscious activities must be "located" in the cortex, that all subcortical activities must be identified with unconscious conduct or processes, and that all unconscious processes must be subcortical, are among the main preconceptions ruling neurology to-day. If these preconceptions are wrong, then research in this field is sure to be greatly delayed; and I believe that these conceptions for the most part are wrong. When one considers the origin, the growth and the functions of the nervous system *as a whole*, then these notions stand out as contradictory of all unprejudiced induction or analysis. If the bulk of scientific opinion is quoted in their favor, yet this is not surprising if we observe that they who give them acceptance suffer from the same traditions as do they by whom the investigations are made. Few scientists have attempted to read the facts they have observed with any wider views. Where they have been forced to do so, the results have been profoundly satisfactory. As example of this, we may note the confusion and darkness that covered the problem of "visual localization" so long as all consciousness was denied to the subcortical parts, and while no distinction was made between the "higher" and "lower" functions of vision; and then contrast this with the present status of this problem, *i. e.* that which takes cognizance of the specifically graded function of the upper and lower areas of the left occipital lobes, of the unilateral and the bilateral activities of the hemispheres, of the thalami, and of the corpora quadrigemina. Throughout the slow genesis of these views, which forms one of the most interesting and instructive developments in the whole great problem of localization, we see the newly observed facts of aphasia and of experimental investigation, slowly and with great difficulty, correcting and fighting against the assumptions which had become

accepted law through no other excuse save those which are the subject of this paper.

From the first, the problem of localization has been aborted by false traditions. At the very outset false notions of the will gave a wrong significance and interpretation to the pioneer localizations made in the Rolandic region. Our emphasis of these as "motor" in turn blinded investigators to the true nature of all the so-called "sensory lobes." Also, as the latest reports show, preconceived notions delayed our understanding of the cerebellum. Similar things happened regarding the histology of the cortex. So long as the motor and sensory functions were supposed to be anatomically separate, it was easy to give the big cells of the rind wholly to the "necessarily powerful muscle innervations." The tradition that the ideational side of mind does not demand equal "power" with the connective, lent itself to this view. But according to the very latest reports there is reason to suspect that the branches of the broadest and most capacious of these cells lead finally upward rather than downward, and that their "greater power" has equal, if not more, reference to associational processes within the cortex, than to direct muscular innervations issuing out of it. All of these latest histological determinations quite keep pace with the newly determined psychologic law that all ideas are motor ideas, and that all associations, both within the cortex and without the cortex, stand on the same plane. And this parallel advancement in the two spheres admirably examples the good that would come were equal regard paid by physiologists to the new psychology, though admittedly not yet wholly satisfactory, as to the old metaphysics which, though hoary with conservative and unsuspected acceptance, yet proves upon examination to be still less satisfactory.

One of the most serviceable tasks that could be performed for our two sciences to-day (and one, I believe, that can only be accomplished by them jointly), would be to clear the air of obfuscating notions regarding "sub-conscious consciousness." Both sciences are becoming filled with obscurities under this head. It is well known how much is made of such processes in many current theories regarding hypnotism, multiple personalities and psychical research. Already we have encountered them

in the realm of physiology, influencing Dr. Foster's theory of pain. A still wider use is made of them in the fields of biology by those men who are penetrating enough to see that a broader hypothesis regarding the relation of mind to body is indispensable for the advancement of *all* science in the near future: for example, by Prof. Lloyd Morgan in his "Comparative Psychology." Into whatever field of "the living sciences" one turns, he finds an incontrollable tendency, at present, to cover up whatever is not understood regarding obscure neural processes, with blind and wordy assumptions of subconscious sensory activities. Our problems of binocular vision, of hearing, of the knee-jerk, and our motor problems generally, are full of this sort of mystery. No one who has not specially examined the subject can suspect how widely and how pretentiously this looseness prevails. A short while ago I listened to a famous professor who, beginning with Prof. Wundt's description of his visual fields of perception and apperception, proceeded as follows:

> "We are fully conscious of what we see through the fovea. The outer edges of the retina perceive, but do not apperceive. What they perceive is *in* consciousness, but is not noted. But if things may be *in* consciousness and not noted, then anything, and therefore everything, may be thus in our consciousness though not noted. And therefore the mind of the Absolute and all other minds may be in our mind; and our mind in every other mind; and all minds be one. In which case personality will mean solely the specific process of 'noting' or 'apperceiving'; and 'various personalities' will signify but so many separate 'loci of apperception' within the one Absolute."

This is a beautiful conception and perhaps a true one; yet before it is established much of its vagueness must be dispelled. Before we go further, it is necessary to know definitely, both on the neurological and the psychological side, what "noting" and "perceiving" and "apperceiving" involve. And while seeking this information, it is disastrous in both fields to talk blindly of "unconscious consciousness," and to cover up processes that are not understood with mysterious doctrines that are still less understood.

In view of this pernicious and increasing tendency, it is important that two things be done. First, endeavors should be made experimentally to clear up these obscure processes, and

since this must chiefly be done by anatomical and functional investigations, the work is likely to fall peculiarly to physiologists. And secondly, in this work physiologists must avoid being misled by the use of false psychological language. Let us all remember that it is not necessary to assume that the sensory counterpart of every possible external stimulus (external to the cortex) is directly represented "in consciousness" until it be proven that an unbroken communication from the periphery to the cortex has actually taken place. For example, when it is asserted, as has commonly been done since the day of Berkeley, that "muscle-sense" constitutes the important element in our perceptions of visual depth, let us remember while this may be true or not, that it is not necessarily true just because movements of the eyes facilitate these perceptions. The latest researches, indeed, make it extremely doubtful if muscle *sensations* enter at all into the sensory result. While it is necessary and well proven that currents descend from the cortex to move the eyes, it is not proven that retinal currents, running back to represent in consciousness the muscular contractions so occasioned, either actually occur or would be of the slightest use. The harm of assuming unconscious visceral impulses to explain all cases of hunger we have already discussed. In investigating all such processes, then, let us hereafter, and till we know the truth, speak of them as affecting the cortex and consciousness in some unknown manner; this rather than bolster up an unfounded doctrine which leads on to endless mistakes and adds no real comprehension to our stock of knowledge.

All I have said from the first regarding "visceral sensations," "emotions," "unconscious and conscious instincts," and "unconscious and sub-conscious neural processes," leads up to the brief final word which I still have to say about "personality." Leaving aside all religious questions, and confining our considerations alone to the neural processes involved, regarding no question of to-day is there greater traditional prejudice, in the midst of most obvious contradictions of such views, than now prevail regarding personality. It is said that the problem is beyond practical research and outside of physical analogy. Upon examination this does not appear to be the case. If two Leyden jars be differently charged and then properly connected, they will imme-

diately join in one electric "personality." If two sensory neural cells discharge mutually and unobstructedly into each other, they likewise join into a strictly analogous "personality." The psychic counterparts of similar happenings to this in the cortex and higher brain centres, constitute *our* psychologic personality. The whole problem, in so far as the nervous system is concerned, is one of simultaneously connected and mutually influencing neural activity. If an impulse gets sent in to the cortex, say from the lumbar region, in a way to modify and to participate in what at that instant is going on there, then that impulse will get represented in *our* consciousness. If the impulse does not reach high enough, but stops in some lower and momentarily disconnected ganglia, then it will not get represented in *us*, *i.e* not in *our* minds.

The question now rises, of these massive split off groupings of subcortical activities which are strictly analogous with those of the cortex, and which perhaps at times are no contemptible rivals of them: are these attended with consciousness of their own or not? Assuredly it would be unwise for science to commit herself precipitately, and without profound consideration of the full depth and breadth of the problem, to the hypothesis that *all* so-called physical processes are conscious processes. To do this would be as unwise, perhaps, as it has already proven to be for her to shut herself within the opposite doctrine. Science is too vast, too precious, and yet far too unknown, to be staked either through rashness or through traditional superstition upon *any* narrow prejudice.

Undoubtedly, also, due heed must be given to religious beliefs. But it is just for this that I most earnestly plead for more strenuous consideration of our problem of personality. I believe in our personal life after death. With many others, I do so solely and wholly on scientific grounds. With them, I am convinced that a full and fearless investigation of the problem will, in time, substantiate this faith and make its reasons clear. Moreover, the time is rapidly stealing upon us wherein it breeds the greatest possible danger to religion to repress and to vilify these investigations. Just enough is becoming known or suggested, inevitably to lead to the most nauseating mystic and abortive results, unless fostered within the antiseptic atmosphere of pure science.

The modern facts of hypnotism, of multiple personalities and of psychic research can not safely be ignored. The worse the hands they are left in, the worse must be the result. This danger on the one side, and, on the other, the encouragement which is prompted from every analogy or rational conclusion which I am able to deduce from psychology, biology and neurology, and, as well, from chemistry and physics, urge imperatively that all science should now unite in earnest reconsideration of the fundamental conceptions of matter and mind, and that among these the problem of personality be given its rightful place.

"Visceral sensations," "insanity," "emotions," "instinct," "personality," "the unconscious," "the sub-conscious," "the conscious," all these processes, I trust, now stand significantly related within the thesis of this paper. Each one of them represents a practical sphere of physiology which remains shrouded in great darkness and misconception by reason of crudely primitive metaphysical notions which have come down to present science uncriticised, and which present science shrinks from properly examining for fear of becoming metaphysically speculative. Nor are these exceptional examples. Practical physiology, and especially practical psychiatry, is full of them. I could as well have selected, to the same end, any other of several similarly related groups of "traditions." I hope, however, that what I have said of these may kindle in you a thoughtful consideration of the proposition, that there is as much need that physiology shall unite now, heartily and generously, with psychology to purge the realm of the latter from primitive scholasticism, as it was, at an earlier date, for her to drive out from her own realm the false notions of physiology, derived in the same manner from the same sources.

CAMBRIDGE, MASS.

PRELIMINARY REPORT, CLINICAL AND PATHOLOGICAL, OF A CASE OF PROGRESSIVE DEMENTIA.

CHARLES K. MILLS, M. D., AND MARY A. SCHIVELY, M. D.

The case under examination presented the following history: The patient, a woman, aged 64 years; married; was always of a nervous, somewhat irritable, temperament, but mentally bright and clever, with linguistic and other accomplishments. After the birth of her first child she had an attack of mania. When about 23 years of age she had an attack of chorea which lasted for several weeks. When 35 years of age, apparently as the result of unusual worriment, she became more irritable and her temper was afterwards capricious. For a period of ten years preceding her death she was subject to spells of excitement which almost amounted to transient derangement; but she had no tangible delusions, although she had a tendency to persecutory ideas. About the same time she began to show a decided amnesia for names; this gradually, but surely, increased. She had, however, no motor aphasia, but could converse and write well until within three years of her death. During the third year previous to her death she became so unreasonable that it was almost impossible to live peaceably with her; she having at times outbursts of uncontrollable passion.

During the second year previous to death she had two attacks of what appeared to resemble la grippe, during which time she complained of intense pain in the head and back; from the first of these attacks she recovered, but from the second she did not, the pain in the head being persistent and always referred to the right parietal region; insomnia was marked. General failure of memory was observed about this time and she became half bedridden.

During the last eighteen months of her life she was confined to bed continuously. Her chief symptoms during this period

were vertiginous attacks; difficulty in orientating herself; marked amnesia, not only for names, but for recent events. She gradually became feebler mentally, and during the few months preceding death was in a state of decided dementia, with occasional spells of excitement. Her attempts at conversation were childish, and she had numerous transient, unsystematized delusions. An ophthalmoscopic examination made one year previous to death was negative.

There were no bed-sores and no paralysis at any time. The case was one in which the entire fabric of the mind seemed gradually to break up, and step by step with mental failure progressed failure of the physical powers. On November 5th, 1896, she suddenly became comatose and died the next day.

The post-mortem examination was made on November 7th by Dr. Burr and Dr. Kelly. The following pathological conditions were present: The dura was somewhat thickened; the pia arachnoid was opaque. The vessels of the base of the brain were atheromatous; the anterior communicating showed aneurismal dilatation. The pial vessels on the ventral surface of the pons showed miliary aneurisms. Portions from six regions of the cortex were removed and hardened in alcohol; the remainder of the brain was placed in Müller's fluid.

Microscopical examination reveals the following pathological changes: Sections stained with thionin (according to the method of Lenhossek) and by methylene blue (Nissl's method) show internal changes in the neuron. These changes consist in irregular arrangement of the chromophilic particles of the cell body—disappearance of these from some areas and aggregations in others—giving the cell body a vacuolated appearance. The chromophilic particles are absent from, or sparsely scattered through, the cell processes. The nuclear changes consist in absence of large chromophilic particles, while the finer dust-like particles and the normally clear karyoplasm stain irregularly; the nucleolus stains deeply.

External cell changes (as demonstrated by the silver-phosphomolybdate method of Berkley) consist in roughening and deformity, extending in some cases to excavation of the cell corpus. The basilar dendrites show moniliform swellings along their course or present clubbed extremities; in some cells there

is loss of several dendrites. The apical dendrite is roughened and deformed in contour. The axis cylinder remains intact. The long pyramidal cells seem to be most affected by these changes. The Purkinje cells show thickened stems with short stumpy branches in place of the complex feathery dendrites of the normal cell.

The protoplasmic glia cells present a series of transitional changes; the fine mossy granulation appearance of the pseudopodia is lost and varicose swellings appear in their course. Other cells take on an irregular, botryoidal appearance and finally evidences of disintegration are to be observed. Deiters' cells are numerous, both in cerebrum and cerebellum.

The basilar and internal carotid arteries show increase in the number of true endothelial cells and a growth of new connective tissue derived from the endothelium. This growth consists of branching cells, proliferated nuclei and basement substance with areas of atheromatous degeneration. In the posterior communicans the intima, media and adventitia are about equally thickened. The anterior communicans of the left side shows aneurismal dilatation. Thrombi are present in all these vessels.

The pial vessels show stasis, aneurismal dilatations, tortuosity and thickening of their walls, with nuclear proliferation. In all regions there are evidences of extravasated blood in the form of groups of corpuscles and hæmatoidin crystals. The region of miliary aneurisms shows similar changes.

All the cortical vessels are over-distended with blood corpuscles; they are exceedingly irregular and tortuous in their course, and appear to be greatly increased in number. The perivascular lymphatics are distended.

Areas of softening occur in the right ascending parietal region; they consist of a reticulated stroma surrounding a central cavity which contains portions of blood-vessels, blood corpuscles, hæmatoidin crystals and fragments of nerve and neuroglia tissue. Areas of coagulation necrosis are present in the left ascending parietal region.

Medullated fibres of the ascending parietal region, optic chiasm, and of scattered areas in the pons and medulla show different stages of myelin degeneration.

In addition to the methods above referred to, sections were

stained with hæmatoxylin and eosin; with hæmatoxylin, picric acid and fuchsin; and also according to the Weigert-Pal method.

In conclusion, the pathological features of the case may be summarized as follows: 1. Internal and external changes in the neuron; 2. Changes in the protoplasmic glia cells; 3. Changes involving the cortical and pial vessels, also the vessels at the base of the brain; 4. Multiple areas of softening in the ascending parietal region; 5. Myelin degeneration.

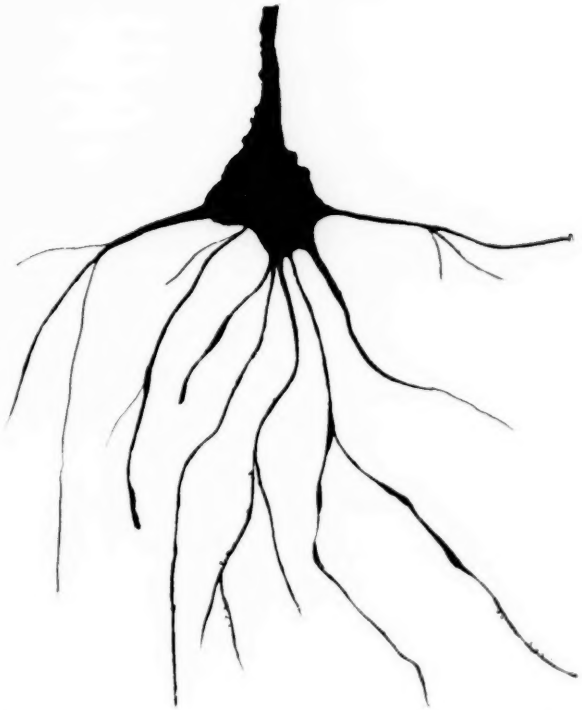

FIG. I.—Long pyramidal cell from the middle occipital convolution, showing roughening of the cell corpus and apical dendrite; moniliform swellings on the basilar dendrites; also loss of gemmulæ.

FIG. II.—Long pyramidal and fusiform cells from the second frontal convolution, showing irregularity in contour; also excavation of the cell corpus; deformity of basilar dendrites; also moniliform swellings of the apical dendrites.

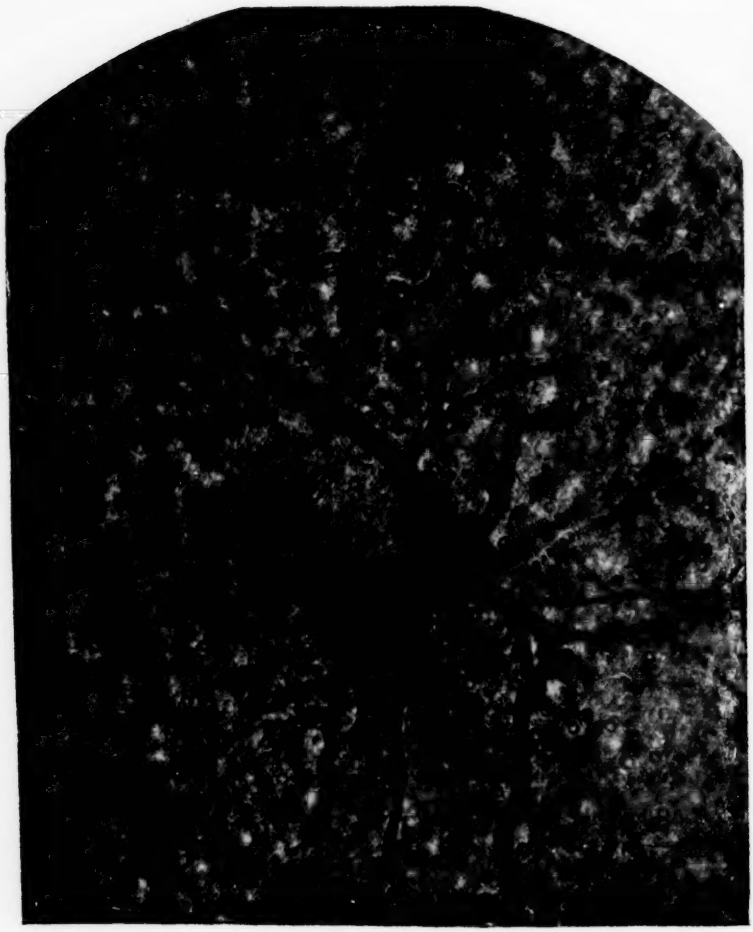

FIG. III.—Photo-micrograph of a long pyramidal cell from the ascending frontal convolution, showing roughening of the cell corpus and of the apical dendrite; also moniliform swellings of some of the basal dendrites.

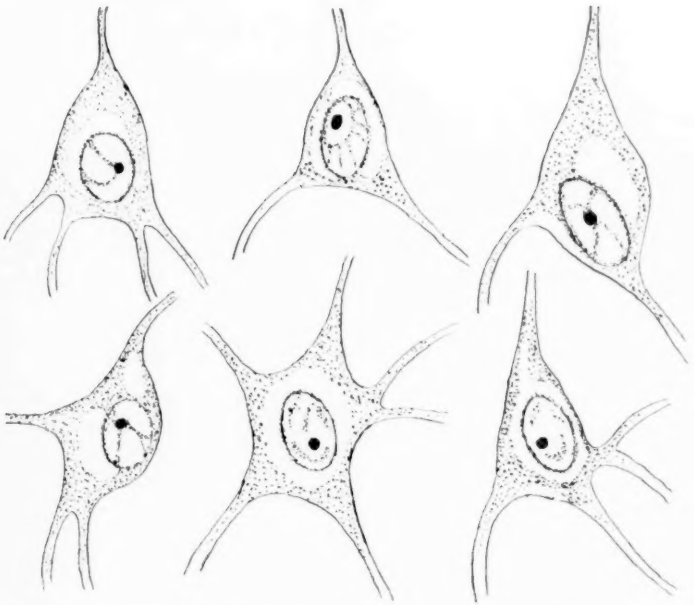

FIG. IV.—Long pyramidal cells from the second frontal convolution, showing vacuolated appearance of the cell body; diminution of chromophilic particles in cell processes; and nuclear changes.

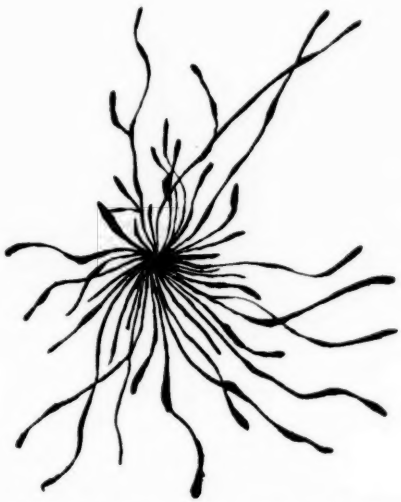

FIG. V.—Protoplasmic glia cell, showing loss of fine mossy granulation, and the presence of varicosities on the pseudopodia.

FIG. VI.—Section from the middle frontal convolution, showing stasis, over-distension of the vessel walls, enlargement of perivascular lymphatic space; also area of softening.

FIG. VII.—Section from the ascending parietal convolution, showing stasis; over-distension of the vessel walls; tortuosity and multiplication of vessels.

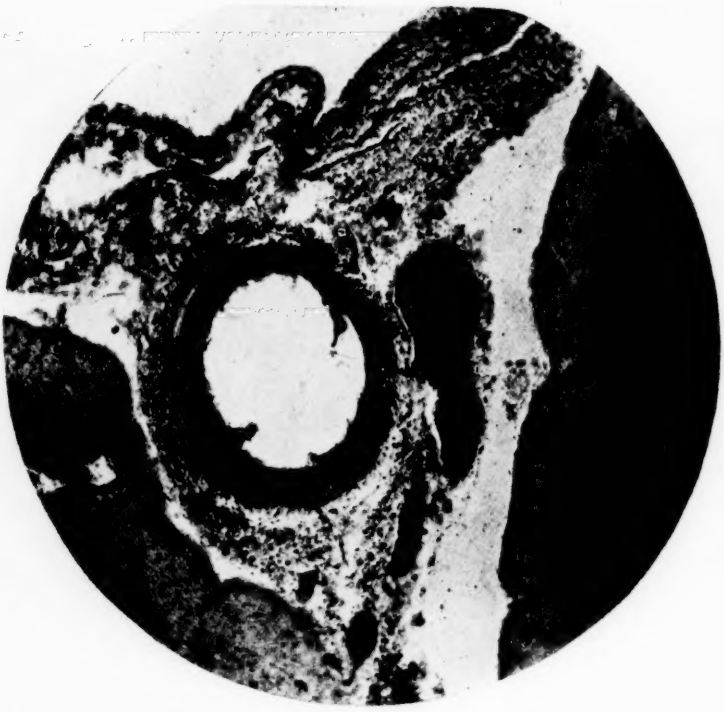

FIG. VIII.—Section in the second temporal region, showing changes in the meninges; thickening of the pia-arachnoid; evidences of extravasated blood; thickening of vessel walls.

FIG. IX.—Section of basilar artery, showing atheromatous condition of walls; also thrombus.

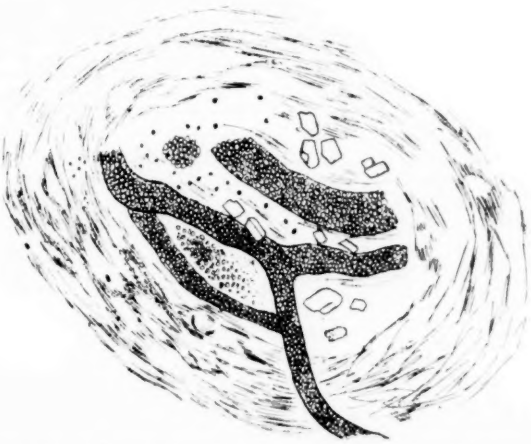

FIG. X.—Area of softening from the ascending parietal region, containing portions of blood-vessels, blood corpuscles and hæmatoidin crystals.

A PRELIMINARY REPORT UPON THE BACTERIOLOGICAL EXAMINATION OF THE CORTEX AND CEREBRO-SPINAL FLUID IN FORTY-SEVEN CASES OF INSANITY.

By H. A. TOMLINSON, M. D.

Superintendent St. Peter State Hospital, St. Peter, Minn.

This preliminary report of the results obtained from the routine examination of the cortex and cerebro-spinal fluid, bacteriologically, in all cases dying and coming to post-mortem examination in this hospital, is made now because the systematic report which I expected to make has had to be postponed.

These routine examinations were begun in the spring of 1895, after the appearance of a paper by Prof. H. C. Wood, of the University of Pennsylvania, in which he suggested that the form of mental disturbance known as "acute delirious mania" might in some instances be of bacterial origin. Since that time other similar reports have been made, and in the "Medical Record" for August 1, 1896, Dr. W. L. Babcock, of the St. Lawrence Hospital at Ogdensburg, N. Y., reports a case of acute delirium in which he found streptococci and pneumococci in the cerebro-spinal fluid both before and after death, and he was disposed to attribute the inflammatory condition of the brain to the presence of the bacteria as a specific cause.

Our clinical work in this hospital, and the microscopical study of the changes in the cortex, found after death in cases of acute insanity, in relation with the diseased conditions present in the chest cavity and abdominal viscera, have led us to entirely different conclusions; viz., that the presence of micro-organisms in the cerebro-spinal fluid and cortex involved their pre-existence in some other part of the organism, and that their presence during the course of acute mental disturbance was not relational or causative, but associative. The details of this association of bac-

teria with the changes found in the brain after death, occurring during the course of acute mental disease, form the subject of a paper which I have in course of preparation, and I will confine myself in this paper to the simple relation of the findings from the routine bacteriological examination of the cerebro-spinal fluid and cortex.

Knowing how easily the results obtained by these examinations might be vitiated by the contamination of the fluid during its removal, and also the liability of the brain itself to contamination from handling, special precautions were taken, and the fact that in a certain number of cases the cerebro-spinal fluid and cortex were found to be sterile would indicate that these precautions had been fairly successful.

Altogether forty-seven examinations were made, and the form of mental disturbance present at the time of death varied from simple excitement or depression to stupor or prolonged terminal dementia. It was thought best to make the cultures in every case, without regard to the presence or absence of active mental disturbance, thus giving the results attained a greater significance than they would otherwise have.

The cases examined were as follows:

Case 1. F. A. S. *Acute delirium.* Cause of death, acute nephritis. Streptococci in the cerebro-spinal fluid.

Case 2. N. S. *Acute excitement.* Cause of death, typhoid fever. Typhoid or colon bacillus in the cerebro-spinal fluid. The distinction could not be made.

Case 3. A. H. *Acute stupor.* Cause of death, chronic parenchymatous nephritis. Growth of colon bacillus from the cerebro-spinal fluid.

Case 4. T. H. *Paretic dementia.* No active mental disturbance. Cause of death, pneumonia. Spirillum of Obermeier found in the cerebro-spinal fluid.

Case 5. R. G. *General paralysis.* No active mental disturbance. Cause of death, hypostatic pneumonia. Fraenkel's pneumococcus grown from the cerebro-spinal fluid.

Case 6. S. J. *Paretic dementia.* No active mental disturbance. Cause of death, acute uræmia. Cerebro-spinal fluid sterile.

Case 7. A. O. *General paralysis.* No active mental disturbance. Cause of death, cerebral hemorrhage. Staphylococcus

pyogenes aureus and bacillus pyocyaneus grown from the cerebro-spinal fluid.

Case 8. G. K. *Senile insanity.* No active mental disturbance. Cause of death, chronic interstitial nephritis. Bacillus pyocyaneus grown from the cerebro-spinal fluid.

Case 9. P. L. *Senile insanity.* No active mental disturbance. Cause of death, chronic interstitial nephritis. Fraenkel's pneumococcus grown from the cerebro-spinal fluid; also stained in section in the pituitary body.

Case 10. H. B. *Senile insanity.* No active mental disturbance. Cause of death, pulmonary œdema. Cerebro-spinal fluid and cortex sterile.

Case 11. M. B. *Senile insanity.* No active mental disturbance. Cause of death, cerebral embolism. Pure cultures of Fraenkel's pneumococcus from the cortex and cerebro-spinal fluid.

Case 12. A. R. *Senile insanity.* No active mental disturbance. Cause of death, uræmia. Spirillum of Obermeier found in cerebro-spinal fluid, but it made no growth on culture media.

Case 13. L. N. B. *Senile insanity.* No active mental disturbance. Cause of death, chronic parenchymatous nephritis. Cerebro-spinal fluid and cortex sterile.

Case 14. A. G. *Terminal dementia.* No active mental disturbance. Cause of death, chronic parenchymatous nephritis. Cerebro-spinal fluid contained diplococci which retained their color by Gram, but gave no growth on culture media.

Case 15. E. B. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. Tubercle bacillus in lung cavity was stained, but inoculation of cerebro-spinal fluid on culture media gave no growth.

Case 16. A. J. *Terminal dementia.* No active mental disturbance. Cause of death, interstitial nephritis. Cerebro-spinal fluid and cortex sterile.

Case 17. A. T. *Terminal dementia.* No active mental disturbance. Cause of death, lobar pneumonia. Fraenkel's pneumococcus grown from pericardial fluid, but no bacteria were found in the cortex or cerebro-spinal fluid.

Case 18. C. L. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. Cerebro-spinal fluid sterile.

Case 19. A. J. *Terminal dementia.* Depressed, marked self-depreciation. Suicide by hanging. All organs healthy except the kidneys, which showed chronic interstitial change. The cortex and cerebro-spinal fluid were sterile.

Case 20. O. O. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. Smear preparation of lung tissue showed tubercle bacilli, but there was no growth from the cerebro-spinal fluid.

Case 21. T. M. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. Bacillus tuberculosis stained in fluid from the pleural cavity, but no tubercle bacilli could be found in the cerebro-spinal fluid.

Case 22. W. N. H. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. The colon bacillus and an unknown spirillum were grown from the cerebro-spinal fluid.

Case 23. J. K. *Terminal dementia.* No active mental disturbance. Cause of death, lobar pneumonia. The staphylococcus pyogenes albus was grown from the cerebro-spinal fluid. The urine contained Fraenkel's pneumococcus.

Case 24. A. D. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. Growth of staphylococcus pyogenes albus from the cerebro-spinal fluid. The tubercle bacillus was present also.

Case 25. W. D. *Terminal dementia.* No active mental disturbance. Cause of death, cerebral tumor. Growth of blastomycetes from cerebro-spinal fluid.

Case 26. J. C. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. Smear preparations and sections of a tubercle in the cortex of the uncus showed the tubercle bacillus.

Case 27. N. A. *Terminal dementia.* No active mental disturbance. Cause of death, cerebral syphilis. Blastomycetes were stained in the cerebro-spinal fluid and grown from inoculation of the diseased cortical area. The syphilis bacillus of Van Niessen was also found in this case.

Case 28. O. J. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. Tubercle bacilli in the cerebro-spinal fluid.

Case 29. R. W. *Terminal dementia.* Depressed, with suicidal impulse. Suicide by throwing himself under the cars. Growth of staphylococcus pyogenes albus from the cerebro-spinal fluid. (There was no injury to the head in this case.)

Case 30. R. O. *Terminal dementia.* No active mental disturbance. Cause of death, cerebral tumor. Growth of syphilis bacillus (Van Niessen's) from cerebro-spinal fluid. The same organism was stained in section in cerebral gummata.

Case 31. A. R. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. Fraenkel's pneumococcus grown from the cerebro-spinal fluid. Tubercle bacilli were present in the sputum before death and in the lung tissue after death.

Case 32. J. H. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. Growth of staphylococcus pyogenes albus from the cerebro-spinal fluid.

Case 33. M. N. *Terminal dementia.* No active mental disturbance. Cause of death, sarcomatosis. Blastomycetes were stained in cortical sarcomata and were grown readily from vaginal exudate. No growth from the cerebro-spinal fluid.

Case 34. C. E. *Terminal dementia.* No active mental disturbance. Cause of death, chronic parenchymatous nephritis. Growth of Fraenkel's pneumococcus from the cerebro-spinal fluid.

Case 35. H. I. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. The cerebro-spinal fluid contained Fraenkel's pneumococcus, associated with the bacillus pyocyaneus, and the same bacteria were found in the urine before death.

Case 36. G. P. *Terminal dementia.* No active mental disturbance. Cause of death, lobar pneumonia. Fraenkel's pneumococcus grown from the cerebro-spinal fluid, and was also found in the pericardial and peritoneal fluid and in lung tissue.

Case 37. K. K. *Terminal dementia.* No active mental disturbance. Cause of death, typhoid fever. Colon bacillus grown from the cerebro-spinal fluid.

Case 38. W. S. *Terminal dementia.* Complete stupor for a month before death. Cause of death, lobar pneumonia. The bacillus pyocyaneus and Fraenkel's pneumococcus were grown from the cerebro-spinal fluid.

Case 39. B. K. *Terminal dementia.* Depressed, agitated and confused. Cause of death, chronic parenchymatous nephritis, and there was also a purulent peritonitis. The colon bacillus was grown from the cerebro-spinal fluid and was present in the peritoneal pus.

Case 40. A. C. A. *Terminal dementia.* No active mental disturbance. Cause of death, mammary carcinoma. The bacillus pyocyaneus was grown from the cerebro-spinal fluid, and the same bacillus with saccharomyces neoformans was found in tumor and a pleural abscess.

Case 41. F. B. *Terminal dementia.* No active mental disturbance. Cause of death, chronic interstitial nephritis. Fraenkel's pneumococcus grown from the cerebro-spinal fluid.

Case 42. M. B. S. *Terminal dementia.* No active mental disturbance. Cause of death, lobar pneumonia with pleuritic abscess. Fraenkel's pneumococcus, bacillus pyocyaneus, staphylococci and streptococci were grown from the cerebro-spinal fluid.

Case 43. L. S. *Terminal dementia.* Chronic excitement. Cause of death, lobar pneumonia. Fraenkel's pneumococcus found in the cerebro-spinal fluid, and the same organism was grown from the gastric contents during life.

Case 44. H. W. *Terminal dementia.* Noisy and destructive. Cause of death, pleuro-pneumonia. Fraenkel's pneumococcus and the staphylococcus pyogenes aureus were found in the cerebro-spinal fluid, and the latter also in fluid from the pericardial and pleural cavities.

Case 45. A. F. *Terminal dementia.* No active mental disturbance. Cause of death, chronic interstitial nephritis. Streptococci were grown from the cerebro-spinal fluid and also found in the kidney.

Case 46. J. S. *Terminal dementia.* Noisy and destructive. Cause of death, uræmia. The bacillus pyocyaneus was found in the cerebro-spinal fluid.

Case 47. S. P. *Terminal dementia.* No active mental disturbance. Cause of death, pulmonary tuberculosis. The cerebro-spinal fluid contained the tubercle bacillus, as did also the pericardial and peritoneal fluids.

By a reference to the foregoing list it will be noted that three of the cases were recent, two of which were acutely excited and the other stupid. In one case where excitement was present,

streptococci were found, while in one excited case and in one stuporous case the colon bacillus was found.

Four were cases of general paralysis, and in no two of them was the same micro-organism present; yet the mental condition was the same in all of them at the time of death.

There were six cases of senile insanity, manifesting no active form of mental disturbance at the time of death, their condition representing merely different degrees of dementia. In two of these cases the cerebro-spinal fluid was found to be sterile; in two others Fraenkel's pneumococcus was present, while from the other two were grown the bacillus pyocyaneus and the spirillum of Obermeier.

The other thirty-four cases were all of terminal dementia and manifested no active mental disturbance. In seven of these the cerebro-spinal fluid and cortex were sterile; in one an unrecognized diplococcus which stained by Gram was found; while in the balance eight different micro-organisms were found, and in some of the cases two and three different varieties were grown.

Our clinical experience, coupled with the evidence furnished by these cases, would lead to the conclusion that in any case of illness where micro-organisms are present, if the diseased condition is severe or the individual's vitality is low enough to admit of rapid growth and therefore general dissemination of the micro-organism present, it will be found in the cerebro-spinal fluid, but why micro-organisms should be present in the cortex in some and absent in other cases we have not been able to determine, nor the fact that sometimes two or more micro-organisms are present in the bodily organs, but only one of them in the cerebro-spinal fluid. The pneumococcus is more commonly found than any other form of micro-organism, and next to this, staphylococci; but a reference to the mental condition of the patients in whom these bacteria are found shows that the presence of these organisms has no significance in relation to the form of mental disturbance, but does bear a more or less constant relation to the bodily disease present.

In those cases in which the cerebro-spinal fluid and cortex were sterile the bodily disease was of short duration or mild. Of the eight cases in which the cerebro-spinal fluid and cortex were sterile, one was a suicide who was physically in good condition at the time of death. Three were cases of chronic kidney

disease where the patient had been in fairly good physical condition up to a short time before death.

Three were cases of pulmonary tuberculosis in whom the disease ran a comparatively short course, and one was a case of pulmonary œdema coming on in an old man soon after a subdural hemorrhage. In those cases in which the pneumococcus (the micro-organism most constantly present in meningitis) was found, thirteen in all, the clinical picture varied widely, but in all the cases some degree of pulmonary congestion was present. In five of the cases there was an acute lobar pneumonia and in another a hypostatic pneumonia. In three the immediate cause of death was nephritis, while in two it was chronic pulmonary tuberculosis, and in one cerebral embolism. In all of these cases the brain changes were those found in terminal dementia, and in none of them was there an acute process present.

These observations will be continued, but in order to make them more definite, a detailed study is being made as follows:

Cultures are now made from the cortex, cerebro-spinal fluid, pleural fluid, pericardial fluid, abdominal fluid, and from the tissue of that organ which is found most diseased at the time of death. As the result of our observations so far, the conclusion seems warranted that deductions concerning the pathology of insanity, based upon the examination of the brain alone, are likely to be fallible.

NOTE.—Since writing the above, and in discussion with different bacteriologists concerning the examination of the brain in cases of insanity, I find that examinations of the cerebro-spinal fluid and cortex have been confined to cases presenting symptoms which suggested the presence of bacterial infection, and that no account has been taken of the bodily disease, if any, from which the patient may have been or was still suffering, during the existence of the mental disturbance, as a possible place of origin for the micro-organisms found in the cerebro-spinal fluid. This omission, coupled with the fact that the absence of bacteria in other forms of mental disturbance, has, so far as my reading goes, been inferred and not demonstrated, would at least render doubtful the assumption that any form of acute mental disturbance was bacterial in its origin. Beside cerebral abscess, meningitis, both septic and tubercular, presents the same clinical picture, so far as the form of mental disturbance is concerned, but the form of micro-organism found post mortem is by no means constant.

The examinations made since this report was written, conducted with more elaboration and care, steadily tend to confirm the conclusions expressed in the report.

DEMONSTRATION OF VARIOUS TYPES OF CHANGES IN THE GIANT CELLS OF THE PARACENTRAL LOBULE.[1]

By ADOLF MEYER, M. D.,
Worcester Lunatic Hospital, Worcester, Mass.

I would like to give a demonstration of cell changes due to auto-intoxication and to some other causes. I do not think I shall be able to add anything to the intoxication theories or to the aspects of mental disease as they have been offered to-day by Drs. Clarke, Hill and Hurd. I think, though, the remarks of Dr. Van Gieson deserve reiteration, that we must learn to see in the brain an organ analogous in structure and also in its physiological working to other parts of the body. If we then consider how little is known in regard to the toxines that produce changes in other parts of the body, let me say in the skin, I think we shall feel that we are not alone in our relative ignorance of the actual details of the process of auto-intoxication and diseases of metabolism. If we wish to consult with our friends in neurology they will meet with the same difficulties we encounter and on the whole will not be able to show that they have made marked progress beyond what has been attempted in our special field. The result of such a comparison, therefore, is not to me depressing. I think that in medicine in general the auto-intoxication theory is a problem brought most into evidence by our specialty, and surely we have most reason to regret that physiological chemistry and experimental pathology do not help us more to get out of the period of mere speculation. The changes of nerve cells that I wish to demonstrate are all shown in one type of nerve cell, the large pyramidal cells in the fore-brain. I choose that cell because it is the largest and because it is best to study the changes in various forms of

[1] Read at the annual meeting of the Medico-Psychological Association at Baltimore, May 12, 1897.

disease on the same type of cell and on the cell that is most likely to show them without being too sensitive to slight post-mortem changes.

The first case is a marked type of degeneration on the ground of arteriosclerosis, so-called simple pigmentary degeneration, such as is found in senile dementia. The second type is furnished by a case of senile melancholia, partly allied to the forms of pigmentary degeneration, and partly to the lesion after interruption of the nerve process or axone, the reduction in size of the granules, showing moreover the formation of peculiar whirlpools. The third case shows the consequences of a hæmatoma (so-called hemorrhagic pachymeningitis), probably pure mechanical pressure. Finally, two cases which must belong to the general group of intoxications, one observed in a general hospital and manifesting symptoms that led to a diagnosis of meningitis, coming on during florid secondary syphilis; the other case of subacute course and a symptom-complex allied to that of hysterical insanity with choreic and convulsive manifestations, passing over into incoördinated restlessness with complete disorientation. I have not time to enter upon the cases in detail; they will be more fully described in a later publication. The chief thing I have in mind is to take the opportunity of showing you the actual specimens, since they represent important types, and since an inspection of the specimens always furnishes a far better idea than the reproduction of drawings.

I have chosen for demonstration, sections from the paracentral lobule in all of the cases. I show first a normal cell from this region in a rather thin paraffine section. (Fig. 1.) You will see a large cell body of pyramidal shape with a large apical process and smaller lateral dendrites. Near the middle of the cell body you see a large nucleus with nucleolus. The protoplasm shows streaks and granules of a deeply stained substance, so-called Nissl bodies or tigroid substance of Lenhossék. Between them there are plain paths which are stained quite faintly, and which we know to contain the fibrils, probably the most important part of the nerve structure. In some of the cells, in the neighborhood of the nucleus, you would observe a nest of brownish pigment granules. The dendrites stain similarly to the protoplasm, as they have slender streaks of deeply stained matter, besides the

non-stained (fibrillary) substance. The neurite or axone is not stained, as it does not contain any Nissl bodies, but simply fibrils. Passing to the cells in a case of arteriosclerosis you see a number of the cells of normal appearance, others with an exaggerated amount of pigment; and finally, cells which resemble a bag of pigment, with just a small remnant of an apex process into which a shrunken nucleus is pushed. (Fig 2.) Intermediate stages show that the first thing that occurs is a dissolution of granules giving place to pigment. The degenerated cells are frequently in nests together, which would suggest local disorders of nutrition.

In the second case, the patient with senile melancholia, you notice changes somewhat similar to those found in motor cells of the cord and medulla from which the nerve process has been cut off at the periphery. A type of this lesion is seen in the cells of the facial nucleus in a case of facial paralysis due to infiltration of the periosteum of the internal auditory canal, to be described elsewhere.[1] The lesion of the cells consists in a reduction of the size of the granules, or complete decay into dust-like particles, leaving in certain places (usually opposite the axone) areas of an almost homogeneous transparent character, general swelling of the cell body, and usually dislocation of the nucleus to the surface. In our case of melancholia, both paracentral lobules showed lesions of the large pyramidal cells. In all of them the granules were smaller than normal. In part of the protoplasm (Fig. 3) there is in many cells a homogeneous dissolution of the structure as if the details had been washed out; the nucleus frequently seemed distorted and flattened, as if pressed to the wall by this swollen portion. Independent of this, or sometimes along the margin of the swollen area, there appears an accumulation of yellowish pigment. Other cells show practically no "glassy" swelling, but a peculiarity in having the very slender Nissl bodies arranged in striking whirlpools (Fig. 4), such as I have not seen in any normal cells; in fact, in no nerve cell outside of this case, and which to my knowledge are not described anywhere. The nucleus forms in many cells the centre of these vortex formations, and frequently is so covered up by them that the Nissl stain does not give an outline of its

[1] Journal of Experimental Medicine, November, 1897.

capsule. In other cells there is a combination of glassy degeneration with whirlpool formation; in some of them two distinct foci of glassy decay separated by a distinct capsule of slender Nissl bodies. An explanation of this condition is somewhat difficult. It might be intelligible on the supposition that the glassy degeneration of part of the cell body might produce certain distortions of the internal structure in the rest, as is actually seen in many of the cells, and that cells which show these vortex formations would be in a state of recuperation, as is most marked in the large ones. Another thing that must be thought of is, that owing to the smallness and slender form of the granules their grouping is more readily observed than in the normal cells, which may occasionally show a slightly similar condition. Indications of this have been noticed by myself in another case of senile dementia. I would not like to be understood as considering this case as the type of what occurs in senile melancholia, since other experience in this line is not favorable to this view, and since a further examination of the basal ganglia will probably reveal lesions of the projection fibres within the internal capsules.[2]

In the next case, in which death occurred probably about eight days after the onset of an extensive subdural hemorrhage, the changes in the cells are somewhat different. We are most probably dealing with the effects of lasting pressure through the hæmatoma; perhaps, largely mechanical interference with the metabolism, since in a case of very acute increase of brain pressure, a slight indication of the same alteration was found. It consists (Fig. 5) in the dissolution of the granules into a uniform dust. The cells look in no place as glassy as in the former; there is rather a hazy diffusion of the chromophilous material without any swelling of the cell body; the latter is rather deeply stained and the dendrites are faint, but easily followed for a long distance. In some cells the streaks within the dendrites are slightly preserved, on the whole, better than in the cell body. The nucleus has not undergone marked changes. Within the same brain there are many cells which show advanced pigmentary

[2] This proved to be true to a limited extent only. A second case examined later, a patient with typical senile melancholia, gave evidence of identically the same changes as those described above. Both will be published in full as soon as the basal ganglia of the second case are examined.

degeneration. The two lesions are not to be confused; the one is an acute mechanical disturbance of metabolism, and the other a chronic senile degeneration. It may be well to say that in this case the cells of the cerebellum were not affected, as they were protected by the tentorium.

Finally, I wish to invite your attention to two cases resembling in their pathological changes those which have been described by Cramer in a case of acute insanity, and quite recently by Hoch in another case of acute insanity in a paper read before the Boston Medico-Psychological Society. One of my cases came to autopsy in the Worcester City Hospital, and I was allowed to get material at the autopsy through the kindness of Dr. F. H. Baker. The patient was admitted there with florid secondary syphilis of the mouth and had been in a delirium with convulsions for several days. The cells which we are studying show almost complete absence of the granules, somewhat similar to what we found in the case of hæmatoma, were it not for the lesion of the nucleus. (Fig. 6.) In several of the nuclei, the nucleolus is somewhat enlarged, although not quite so much as in Dr. Hoch's case, and the nucleus as a whole has a distinctly bluish hue. In the smaller cell it is especially noticeable. In the last case, which began February 1, 1897, with a severe cold, developed into choreiform twitching of the muscles, and finally into attacks of hysterical laughing and crying with one spastic seizure, and finally disorientation and obscuration with marked motor restlessness, and death on April 22, 1897, we found also absence of the granulation in the cell bodies and in most of the dendrites, with hardly any glassy or pigmentary transformation and only slight swelling of the nucleoli. The cell as a whole is distinctly swollen (Fig. 7) and the nucleus slightly dislocated towards the apex process. Only in a few cells the nucleus is pushed to the surface or is devoid of nucleolus. To judge from the general course of both the latter cases and from the lesion in the pyramidal cells, we are most probably dealing with two cases of intoxication, the further details of which will be published later on. The first case had no accompanying disease of the internal organs; the second a beginning of broncho-pneumonia with streptococcus infection. I mention on purpose very little about the changes of the nucleoli, since the studies on that part

are not quite closed and other methods besides Nissl's must be used. I hoped, however, to have been able to draw a short sketch of what we must consider to be the most frequent and typical alterations of the pyramidal cells of the cortex.

As to the possibility of there being artifacts among the types described, I should exclude it, because all the autopsies were done within less than twelve hours after death and the material preserved and worked out with all the needed precautions. There is further, a check in the comparison with cells from other localities, which, as said above, were practically intact where the cause of the change was merely a local one.

DESCRIPTION OF PLATES.

All the preparations were stained with Nissl's methylene blue, partly by myself, partly by Dr. Emma W. Mooers. The drawings were made by Miss Florence Byrnes with a Reichert or Leitz oil-immersion 1-12.

Fig. 1. Normal Betz cell. Thin paraffin section.

Fig. 2. Pigmentary degeneration in arteriosclerotic senile dementia.

Fig. 3. Betz cell from a case of senile melancholia. Dislocation of nucleus and "homogeneous" degeneration of centre of cell and of part of apex process.

Fig. 4. Betz cell from the same case, with peculiar vortex arrangement of the Nissl bodies, a condition present in many of the cells of the type given in Fig. 3.

Fig. 5. Cell with dissolution of most Nissl bodies, due to pressure by hæmatoma. No cloudy swelling.

Fig. 6. Three cells, a cluster from the paracentral lobule of a patient who died in a delirium during secondary syphilis. Dissolution and faintness of Nissl bodies. Glassy swelling of nucleus, with slight violet tinge, diffusely stained, especially in the smallest cell.

Fig. 7. Cloudy swelling with dislocation of the nucleus towards the apex; diffuse stain of the protoplasm and dendrites. Case of fatal "Hysteria gravis."

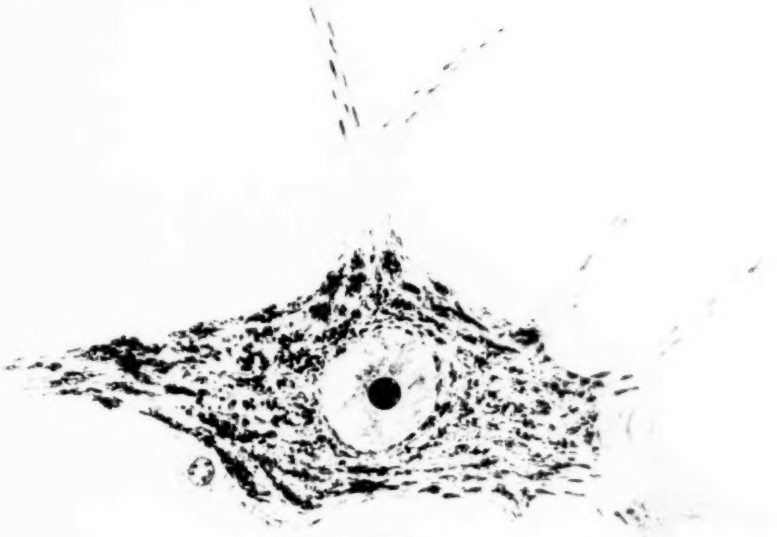

FIG. 1

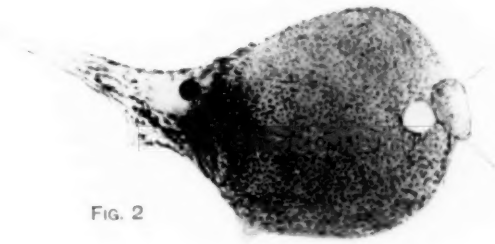

FIG. 2

FIG. 3

FIG. 4

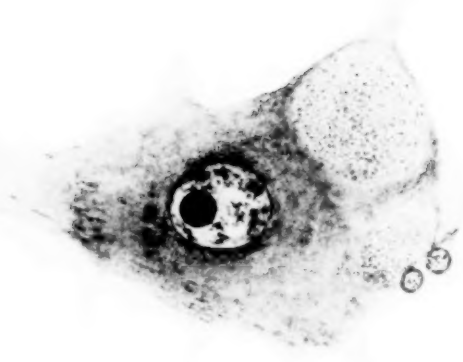

FIG. 5

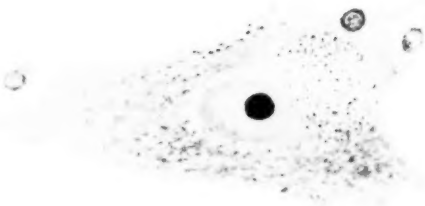

FIG. 6

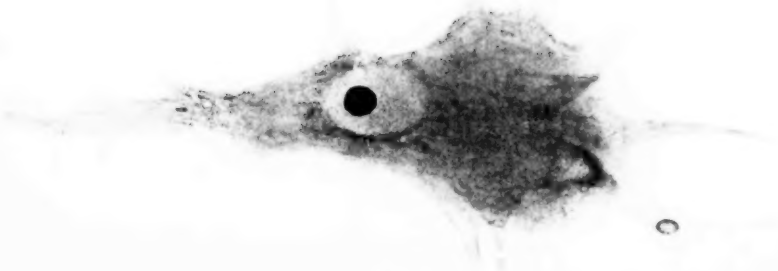

FIG. 7

HEREDITY, A FACTOR IN THE ETIOLOGY OF INSANITY.[1]

By HENRY PUTNAM STEARNS, A. M., M. D.,
Superintendent of The Hartford Retreat for the Insane.

Du Bois Raymond says that "the hereditary transmission of acquired characters remains an unintelligible hypothesis which is only deduced from the facts which it attempts to explain."[2]

Weismann says,[3] "It is impossible to imagine any way in which the transmission of changes produced by the direct action of external forces upon the somatic cells can be brought about."

The views implied in these statements appear to differ from those which physicians have long entertained. Indeed, it would not be easy to quote an authority in medicine who does not refer in some form to the transmission of characters which have resulted from external accidental influences upon the organism. Clouston[4] traces a hereditary influence in insanity in from 30 to 40 per cent. of cases in hospital, and adds that there is a probability of a much higher per cent. He says: "Certainly the tendency to suicide is very hereditary." Mr. J. F. Briscoe,[5] in a paper read before the Medico-Psychological Association, London, 1896, gave as his opinion, after a careful study of the subject, that 90 per cent. of the insane have a heredity of insanity.

All are familiar with the fact that Darwin made liberal use of the doctrine of hereditary transmission of acquired characters in his work on the Evolution of Species.

In view of such an apparent difference of opinion, it may be of interest to examine the subject from the standpoint of the physician with special reference to that change in the character of the brain activities which is the basis of insanity, and as

[1] Read before the British Medical Association in Montreal, 1897.
[2] Ueber die Uebung, 1881. [3] Essays on Heredity, vol. I.
[4] Lectures on Mental Diseases.
[5] The Journal of Mental Disease, New Series, 143.

Weismann appears as one of the foremost representatives of the more recent views, I venture to present, in a brief way, some points of his argument so far as they relate directly to the question at issue.

Heredity, he argues, is a great biological law. Its action covers all forms of life, and its roots reach down into the elements of all living structures. Its effects are, therefore, coeval with the growth of organisms, and should be studied in conjunction with the laws of growth.

All organisms are either unicellular or multicellular. Those embraced in the first class grow to a condition of maturity, and are propagated by a division into two parts. The child cell inherits the characters of the parent cell so perfectly that it cannot be determined which is the older, and this process of division may continue indefinitely. Each organism is a full and completed body, and is endowed with the powers of assimilation, growth, and, in turn, of propagation. Such organisms attain to a degree of immortality. Heredity becomes absolute through the method of formation and growth, and its mode of action is not difficult to understand.

But when we pass into the study of multicellular organisms the problem of heredity becomes more complicated. This is especially the case in the different classes and orders of the vertebrates, where the individual organs and parts have become numerous, highly organized, and the cells of which they are composed have attained great diversity of character. Simple cell division becomes inadequate to even suggest any explanation of the process of hereditary transmission in such organisms; and nature has provided other means through which its laws can operate. This is in nearly all cases by sexual reproduction.

Such an arrangement necessitates the provision of a special order of cell, and also the assumption that at some period in the process of evolution there occurred a division of cells into two varieties: the reproductive, or germ cell, and the somatic cell. The first form of cell is concerned with the preservation of the species, and the second with the preservation of the organism and the discharge of its functions.

The nature of its function would seem to indicate that it is through the germ cell that the force of heredity operates.

Besides, this is the primordial cell, and from it the others originated; it therefore contains the potentiality of a development, under certain conditions, into a complete organism with parental and inherited characters. That is to say, it contains an almost infinite number of infinitesimal elements, each one of which contains a capacity of becoming one of the various kinds of cells, or colonies of cells, which, by multiplication, become members or organs of a complicated organism.

These views do not appear to be unreasonable, and may be accepted in a general way without argument; but an assumption is further made, about which there may be room for doubt. This is, that while the germ cell thus primarily determines the character of the various colonies of the somatic cells by means of its potentiality and continuity of character, the somatic cell has very little influence over the germ cell, and, therefore, that such changes of character as may occur in the latter from the effects of its environment and experiences, cannot be transmitted by the germ cell to a future organism. Weismann says: "Nothing can arise in an organism unless the predisposition to it is pre-existent."[6] That is, the germ cell is independent in its formation and continuous character of those influences which may produce changes and modify the characters of the somatic cells, except, possibly, in a "very slight" degree.

In trying to test the value of this assumption it becomes necessary to inquire in what way characters of the somatic cells may become modified and changed by influences acting upon them from without the organism.

Acquired characters represent two forms: first, those that depend upon an increase in the normal function of an organ or colony of cells; and, second, those which result from a diminution of function, or a modification in its form of activity. The function itself depends upon and has its representative in an original or inherited organ or member of the general system, and both the quality and quantity of the function will depend upon the character of this physical basis. But with a given quantity of physical basis, the quality of it will determine both the amount and perfectness of the functional product.

For example, a man of very great intellectual capacity, such

[6] Essays on Heredity, vol. I, p. 172.

as a Shakspeare or a Napoleon, may not have a brain of greater weight than the average man, but the inference that certain parts of it are more highly developed; that the cells are more sensitive to impressions and the recording of them; that the connection between the different groups of cells throughout the cortex is more perfect in functioning, thereby giving rise to wider generalizations, would be legitimate. In a great painter and musician those portions of the brain which are the centres of vision and hearing would be composed of a more highly organized structure than the corresponding parts in the average man. In an inverse order, the feeble-minded and idiotic have imperfectly developed physical representatives of their mental faculties, either in quantity or quality, or in both.

Increase in size and in the amount of function of any part or organ of the system arises from the transmission to it of larger measures of organic energy than have before been supplied, and which act upon its elements in the form of stimuli. The effects of such stimuli may become so continuous and powerful in some cases as to result in the development of a greater capacity of function, or in other words, an acquired character.

On the other hand, when the measure of such stimulus to any organ or part is lessened from the effects of exhaustion or from any other cause, there must of necessity result a diminution in the physical elements and also in the function of that organ. In process of time a secondary character may result from such physiological or pathological changes.

The scope of this paper restricts us mainly to a consideration of that form of acquired character which arises from a diminution or modification of normal mental function.

It is not possible accurately to determine how perfectly the elements of the cortex, in the fronto-parietal segment of the brain, recover from the effects of the impairing and destructive processes which occur during an attack of acute insanity. It doubtless varies to some extent in different cases, and depends upon the original recuperative capacity of the brain tissue and the severity and length of time during which the disorder exists. It is, however, a well-established fact, that after the brain has once experienced the continued excitement or depression incident to acute mania or melancholia, there ever afterwards remains, at least, a

tendency which may, from the experiences of trouble, worry and grief, result in one or more additional attacks of disease. Habit of action in a normal condition of the brain becomes a sort of "second nature" with most persons; and much more does a habit in the character of activity, which has become established in a disordered state of the brain, tend to become permanent. In some cases, under a favorable environment, this tendency may not become converted into a reality; in others it does so at the grand climacteric or in old age. In others still there is a frequently changing character in the mental functions characterized by attacks of excitement which may continue for longer or shorter periods, alternating with states of depression. Such persons may live many years with the functions of the general system not greatly impaired.

In the first class of cases the cells of the cortex may have regained their normal anatomical condition to a large extent, and yet still retain a memory or echo of the morbid experience which will impair to some extent their stability of function, and which will never wholly pass away.

In the second class of cases the impairment is more pronounced, and the normal relation of cell to cell has become so far destroyed that the regenerative process never becomes complete. In other words, a secondary and permanent character of functioning has become engrafted on certain elements of the cortex as the result of external accidental causes which may continue indefinitely.

In such cases the cortical function may become partially restored by means of an increase in the anatomy and capacity of those cells which have remained unimpaired. The process may be compared to that which occurs in the circulation of a limb when one of the larger arteries has been ligated or otherwise destroyed. The circulation becomes re-established and is carried on through other anastomosing arteries, the calibre of which becomes larger in process of time from the continued increase of pressure from the general circulation. The original anatomical character of the cortex, however, so far as it relates to the cells, never becomes restored, and its functions remain more or less impaired.

Now, the assumption of Weismann implies that this secondary or acquired character of activity of the cells of the cortex will

have no appreciable influence upon the ovaries, because these have been so thoroughly isolated during both embryonic and the mature life of the organism during innumerable generations, and are so far removed from the direct influence of the somatic cells. In the present supposed case, this means that they are so far removed from the cells of the cortex which have become impaired from the effects of external causes, that they will continue to functionate independently of such influence, so far as relates to the product of their function; or, if influenced at all, the effects must be, to use his own words, "very slight."

Now, if we regard heredity as equivalent to organic memory, and take into consideration the fact that the ovary has been discharging its function from generation to generation during long ages, it seems not unreasonable to conclude that its character of activity and that of its product are not likely to become greatly changed by those influences which may act upon it temporarily from accidental causes. In other words, those tendencies which have become incorporated in its texture during indefinitely long periods of time must be much more potent than any which may arise from such causes as continue in operation only during the single life of an organism. This may undoubtedly be true so far as concerns the general character of the function of the ovary, but the statement does not cover all the physiological factors or activities which properly relate to it.

The error appears to consist in the assumption that the stored up organic energy of the ovary is the only form of energy which can influence the product of its function, but while this does determine the general character of the function, it is not the only form of energy which is essential to the complete and perfect elaboration of the product. This is true in relation to all functioning organs of the general system.

From the physician's standpoint it is hardly necessary to recall the fact of the very intimate anatomical connection existing between the brain centres and all the organs of the body, nor that other no less important fact, that these organs are absolutely dependent on such connection in discharging their function. The efferent system of nerves presents continuous lines of communication along which stimuli of an organic and functional character may be radiated from the brain.

Cope[7] suggests that it is not necessary to assume, as Darwin did, that there exist throughout the body infinitesimal lines or threads, by means of which gemmules are conveyed from the different colonies of somatic cells to the germ plasm, in order to produce such representative modifications as may have occurred from external causes acting on themselves. Such modifications can be produced by currents or waves of nerve force or energy which are constantly passing to the ovaries from the brain centres.

As illustrating this point I may refer to the fact that all physicians of long experience have had more or less opportunity to observe cases in which certain functional disorders, and even profound emotional experiences existing for short periods only, arrest the progress of menstruation, and it may not again appear for some months. An attack of acute insanity produces such an effect in the majority of cases after the first one or two months, and the functional activities of the ovaries may become partially arrested from other less pronounced disturbances of the nervous system.

Now, if the functions of these organs can be thus affected by influences such as cold, shock, overwork, long continued exhaustion, imperfect nutrition, etc., which have their effects primarily and directly upon certain elements of the brain, why may we not argue, from the greater to the less, that there is still more reason to anticipate some effect upon the product of that function? The assumption which provides the basis of heredity, and which seems to be a reasonable one in the light furnished by microscopical studies, is that the germ plasm contains in its highly organized structure a vast number of elements which constitute the representatives of the future organism, not only in its physical parts, such as the contour of the face, the size and color of the eye, etc., but also some of the characteristics of its organic movements, as well as the qualities of the mind. The considerations above formulated seem to indicate an arrangement by means of which the influence of external causes acting upon the brain may be radiated to these elements of the germ plasm and modify their character. But there are some others of an anatomical character which tend to confirm the view that these potential elements of

[7] Primary Factors in Organic Evolution, p. 450.

the germ plasm not only may, but must, be influenced by such causes.

1. It may be affirmed that all acquired characters and changes in the physiological activities of the system, whether physical or mental, are affected primarily and essentially through influences acting on the nervous system. This is the medium through which the personality comes into relation with the external world. Irritations and influences from the environment act primarily upon it; and this, in turn, reacts upon the different organs and members of the general system. But the nervous system, comprising the brain, spinal cord, and nerves, is essentially a unit. The functions of its different parts, however, are of diverse character, and it is accordingly arranged with special reference to the functions to be performed.

Flechsig calls attention to a distinction between that part of the sensory system of nerves which receives impressions from the external world, and that which is concerned with the functional operations of the body. It is by means of the first kind of sensations, that is, those which come through the special organs of sense and general sensation, that we first become conscious of that which is not ourselves and enter into relations with the world without. The second group of sensory nerves comprises those whose function relates to the physical instincts, such as hunger, thirst, and sexual desire. The fibres of the latter group are found to be the first to become medullated, having connections with the nerves of the cord, medulla, and probably with the internal capsule.

Whether this view is correct, and will be verified in detail in the future, is immaterial. The particular point to which I desire to call attention is that that portion of the sensory system of nerves which has a distinct relation to the ovaries and their product is among the earliest in development, and is related to the primary instincts and profoundest activities of the organism. Provision is, therefore, early made in embryonic life for the future conveyance of radiations of organic energy from the brain to influence them.

2. In the line of this thought Hering, as quoted by Cope, observes: "We notice further on that the process of development of the germs which are destined to attain an independent

existence, exercises a powerful reaction, both on the conscious and unconscious life of the organism. And this is a hint that the organ of germination is in closer and more momentous relations to the other parts, especially to the nervous system, than any other organ. In an inverse ratio the conscious destinies of the whole organism, it is most probable, find a stronger echo in the germinal vesicles than elsewhere."

3. I have, in another connection,[8] called attention to the fact that the anatomy and physiological activities of the cortical cells differ from those of other somatic cells. Each one arises in an independent, isolated form, and not from another cell, in the ordinary manner of somatic cell-multiplication. "The cortical cell has an individual character and anatomy of its own; that its renewals do not occur by accretion or absorption from the surrounding tissues or blood-vessels directly, but from the influence of forces which act from within the cell itself; that the protoplasmic material of the interior of the cell is constantly elaborating nucleoli which in turn become nuclei, and these afterwards become cells proper, so that the cell never dies except from the effects of disease. Its characteristic form, its angles, projections and dendrites appear to be renewed from time to time, while its individual anatomy remains unchanged."

These are the cells upon which the influences of experience and environment, of whatever nature they may be, act primarily and directly, and no secondary character can arise in connection with any part or organ of the system, except from such influences as have first affected them, and have also been radiated by them to such part or organ.

It follows that when the energizing capacity of these cells has become much impaired from the effects of any cause whatever, there must result some corresponding effects in those organs and the product of their function, which are under their influence and are also dependent upon it when in a normal state of activity. But Weismann claims that this influence must be "very slight." "Very slight" is a very indefinite expression when used in such a connection. Be it little or much, however, it is sufficient, when the cortex is in certain conditions, to arrest the progress of menstruation, and to hold this

[8] The Physical Basis of Thought (Lectures on Mental Diseases).

function in a state of suspension continuously for months. If sufficient to effect this it certainly must be sufficient to modify the infinitesimal elements of the germ plasm, which are the representatives of the characters of the future organism.

That this organic connection between the cortex and the ovaries should be more perfect in some persons, families, and races than in others is highly probable; and, if this is the case, the fact would explain why some persons and families appear to be endowed with unusual ability in transmitting characteristics of family and race.

It may also furnish an explanation of the way in which the tendency towards disease and other undesirable acquired characters, and also characters of an opposite nature, which may pertain to one of the parents, may become eliminated or partially overcome. From the microscopical studies of Weismann and others, it appears to be certain that some portion of the elements of the two forms of germ plasm coalesce in the formation of the future organism, and this would insure the larger measure of influence from the more vigorous element.

Possibly it may be inferred that if the effects of a diminution in the function of the cortex may in a negative way have an effect on the ovaries and their product, the same may be true in a positive way in relation to an increase in the function of it.

There certainly exist some reasons for such an inference. Use and a favorable environment tend to attract larger measures of organic and functional energy to the brain. We constantly witness improvement in the quality of mental function from use and discipline, and if the product of function is improved, the inference is legitimate that the physical basis of it has become more highly developed and more finely organized. Indeed, we can judge of the quality of the structure only by the character of its product.

It is true that such acquired characters do not always appear in offspring; and with reason. Both parents rarely possess like acquired characters, and those of one parent may often wholly neutralize those of the other. Again, every one represents characters of the nervous system which are of diverse tendencies, which reach back through many generations in two families. The influence of atavistic tendencies is always operative, and leads to variety, and not uniformity, of characters.

BRITISH MEDICAL ASSOCIATION AT MONTREAL.

SECTION OF PSYCHOLOGY.

At the recent meeting of the British Medical Association held at Montreal, the Section of Psychology, which met in Morris Hall, Presbyterian College, was opened on Wednesday, September 1st, by an address from the chairman, Dr. R. M. Bucke, of London, Ontario, on "Mental Evolution in Man." He first spoke of the fruitlessness of the introspective methods of studying psychology which have been followed down to our own time, and then passed to comparative psychology, which, he said, showed that man's mind was passed to him after infinite ages of slow evolution and amelioration through tens of thousands of generations of placental mammals, our immediate progenitors. In this question of mind he recognizes two distinct processes: first, a gradual evolution toward perfection of faculties that have already come into existence; and, secondly, the springing into existence of faculties which have previously had no existence, as hearing and sight, which are developed by slow degrees from the sense of touch. He supposes mind growing in this way for millions of years. It begins as mere excitability, to which is added, after a long time, discrimination of food. After another long interval, sensation appears, with capacity for pleasure and pain; then memory, recognition of offspring, reason, recognition of individuals and communication of ideas. Concurrent with these intellectual faculties certain moral functions, such as fear, surprise, jealousy, anger, affection, play, sympathy, emulation, pride, resentment, grief, hate, revenge, shame, remorse and a sense of the ludicrous also arise. Mind finally reaches the plane of the higher animals, which is equal to the mind of the human being at about two years of age. At the age of three, self-consciousness is born and, psychologically, the infant becomes a human being. The infant still has to acquire, among others, the color sense, the sense of fragrance, the human moral nature and the musical sense. When self-consciousness first appeared it

must have been at maturity, which we may put at the age of twenty, since childhood and life were both formerly shorter than they are to-day. As we reach mental maturity at the age of thirty-five (average), the advance of the individual from three years to thirty-five represents the advance made by the human mind since self-consciousness first appeared. Of the mental faculties below self-consciousness, each has its own time for appearing in the human infant, as memory and simple consciousness appear a few days after birth, curiosity ten days after, the use of tools twelve months after, and shame and remorse, and a sense of the ludicrous, about fifteen months after. As to animals, memory and simple consciousness occur in the echinodermata, the use of tools is not met with below monkeys, while shame, remorse and a sense of the ludicrous are almost entirely confined to the anthropoid ape and the dog.

As in pre-human so in human psychology each superadded faculty was acquired in its own time in the history of the race, and that historic period corresponds with the time in the life of the individual into whom the faculty is born to-day; thus it has been proved that the color sense was acquired by the race about thirty thousand years ago. It is acquired by the individual at five or six years of age. There are three other laws which are worthy of notice, as follows:

1. The longer a race has been in possession of a given faculty, the more universal will that faculty be in the race.

2. The longer a race has been in possession of a given faculty, the more firmly is the faculty fixed in each individual who possesses it.

3. A study of dreaming seems to reveal the fact that in sleep such mind as we have differs from our waking mind.

Dr. Bucke then compared the faculties of simple consciousness, shame, color sense, moral nature, and musical sense, in the light of these laws, and concluded with the following corollaries: First, that, according to this theory, all forms of insanity and all forms of idiocy are due to atavism. Second, that the human mind is not at present formed, but forming. In conclusion, he spoke of the third, or higher, forms of consciousness at present appearing in our race, which appear, when they do appear, in individuals between the ages of thirty and forty.

An editorial in the British Medical Journal of September 25th disagrees with some of Dr. Bucke's statements, and the writer seems to think that Dr. Bucke is assuming too much when he gives periods for the development of our faculties. The writer also calls attention to the fact that if we have gained some powers, we have lost others; "our tails have atrophied, and so, we think, has the sense of direction which enables dogs and cats to travel many hundred miles home."

Dr. George Rohé, of Sykesville, Md., followed with a paper entitled "The Etiological Relation of Pelvic Disease in Women to Insanity." Dr. Rohé first spoke of the neglect to which patients with pelvic diseases are often subjected, both in England and America. He then spoke of the legality of surgical operations upon insane persons, and showed how the question was answered by decisions of the United States courts. He summarized these decisions. First, the act of a lunatic during a sane interval has, in law, the validity of a sane person, therefore a lunatic in a sane or lucid interval is as competent to consent to a surgical operation of any kind as any person.

Second, the State, acting through courts of equity, is the guardian of all insane persons. The committee which is appointed by this court has power to grant consent for any operation which may be for the lunatic's benefit.

Third, the lunatic may, even if there is no absolutely lucid interval, be competent to give consent to the performance of an operation if he understands its objects and consequences. It is here that the surgeon is placed in a delicate position, as he must take the responsibility of determining whether the lunatic has that degree of capacity requisite to consent.

Dr. Rohé then spoke of the prevalence of pelvic lesions among insane women. In his own examinations he had found sixty per cent. who had some abnormal condition of the pelvic organs, while Dr. Isabel Davenport, of Kankakee, had found as high as eighty per cent. While alienists agree that insane patients have the same right to surgical treatment as sane, in practice this is not carried out, and affections imperiling life do not receive adequate attention. He then briefly reported thirty-four cases which he had operated upon since 1891, with the following summary: Eleven cases made complete recoveries, mental and physical;

nine cases improved, some very decidedly; eleven were unimproved in mental condition, and there were three deaths consequent upon the operation. Several of the cases noted as improved and unimproved had apparently recovered but afterwards relapsed. The total recovery rate was thirty-two per cent.

Dr. A. T. Hobbs, assistant physician in the Asylum for Insane at London, Ontario, continuing the subject, read a paper entitled "Surgical Gynæcology in Insanity." He gave very careful statistics of the London Asylum for the Insane for two and a half years. Out of a hundred insane women examined, pelvic disease existed in ninety-three, and in eighty-nine operation was necessary for the improvement of their physical condition. He then discussed the reasons for surgical treatment in this class, and gave a synopsis of the cases in which operation was performed. Hysterectomy was performed twelve times, fixation of the uterus by Alexander's operation eight times, and by ventri-suspension three times. Divulsion and curettage were performed in fourteen cases. Repair of cervix and curettage were performed on swenty-seven patients. Ten patients were operated upon for diseased tubes and ovaries. Of eighty cases, thirty-seven and a half per cent. made mental recoveries, twenty-two and a half per cent. improved considerably, and thirty-five per cent. showed no mental change. Death followed operation in four or five per cent. He concludes that surgical gynæcology among the insane has gotten beyond the experimental stage, and that it should be recognized and encouraged.

The next paper, on the "After Effects of Surgical Procedure on the Generative Organs of Females for the Relief of Insanity," was read by Dr. James Russell, of Hamilton, Ontario. After making a few remarks on the interdependence of functions of the organs of the human body, he deprecated the tendency of specialism to warp the judgment of the specialist who makes a group of morbid conditions, however slight, responsible for most of the mental and nervous ailments of mankind. He referred especially to surgical gynæcology, and asked if it is true that pelvic disease is the principal cause of insanity, why men do not enjoy a greater immunity than women?—statistics proving that the ratio of insanity between men and women is about equal.

Dr. Russell then gave histories of three cases in the Hamilton

Asylum which illustrated the after-effects of surgical interference for the relief of insanity, in all of which the symptoms were aggravated rather than relieved. He concluded his paper with the opinions of a number of alienists.

The three last-mentioned papers were discussed by Drs. Dewey, D. Clark, J. W. Burgess, E. N. Brush, Urquhart (Perth), Alexander, Spitzka, Meek, and Turner. There was so much interest in the many questions that arose that the debate was adjourned until the next day. When the section again met, on Thursday, September 2d, at 10 A. M., Drs. Rohé, Hobbs and Russell closed the discussion.

Dr. H. P. Stearns, of Hartford, Conn., read a paper entitled "Heredity a Factor in the Etiology of Insanity." He took as his basis for discussion the theory of Weismann, who says, "It is impossible to imagine any way in which the transmission of changes produced by the direct action of external forces upon the somatic cells can be brought about," and gave anatomical and physiological reasons for belief that Weismann was not correct. He spoke more particularly of the connection between the nervous system and the ovaries, and said that this connection was probably more perfect in some persons than others, as some persons and families seem to be endowed with unusual ability to transmit the characteristics of family and race. He gave as the reason that acquired characteristics do not always appear in the offspring, that the parents rarely possess the same acquired characteristics, and that those of one parent might wholly neutralize those of another. Dr. Urquhart commended the paper and agreed with Dr. Stearns. The President regretted that there was no representative biologist of the Weismann school present to discuss the paper from an opposite standpoint.

Dr. Edward N. Brush, of the Sheppard Asylum, Towson, Md., gave "An Analysis of One Hundred Cases of Acute Melancholia." His paper was largely statistical, and while, as Dr. Brush said, the cases were too few in number to establish any criterion, they agreed very closely with other observers. This group was composed of cases admitted during the first five years of the history of the Sheppard Asylum, and formed twenty-eight per cent. of all admissions. Of the one hundred cases, fifty-nine were men, forty-one women. Forty-eight men and thirty-two

women had simple acute melancholia, one man and eight women were of the confusional or stuporous type, and ten men and one woman had hypochondriacal tendencies. In cases discharged recovered the average duration of attack before admission was, for men two months, for women four months and a half. The average time of treatment of cases discharged recovered was, for men five months and eleven days, for women eight months and three days. Dr. Brush said that these figures emphasized the necessity for prompt treatment, and that many hospital physicians persistently urged that not only was the prospect of recovery jeopardized by delay, but the period necessary for treatment was prolonged. Mercier's dictum that the two great factors in the causation of insanity were "stress and heredity" was upheld. Dr. Brush spoke of this class of cases as showing to a large extent gastric and intestinal indigestion, and said they offered a very fertile field for investigation by the physiological chemist, but we must not attribute too much to auto-intoxication, etc., until we known more of the chemistry of our bodies. The treatment was principally to secure sleep and to improve the nutrition. Most of the patients gained weight while under treatment. Thirty-eight, twenty men and eighteen women, were discharged recovered; twelve men and four women much improved; eleven men and nine women improved; five men and four women unimproved, and five men and three women died. Six men and three women remain under care. Sixty-six per cent. of the cases showed suicidal tendencies, and were all of the simple acute class. The paper was discussed by Drs. Sinkler, Burgess, Dewey, Rohé, Haslett of Sunbury, England, who said he had had good results following washing the stomach with strong boracic acid, and Dr. Brush, who, in closing the discussion, said in reply to questions that he regarded hypochondriasis as an unfavorable condition, also picking at the skin. He thought travel desirable in chronic cases, but thought it aggravated the general neurasthenic condition of the acute cases. He did not believe in seasonal melancholia, and thought that in this he was in accord with Dr. Weir Mitchell.

Dr. Daniel Clark, of Toronto, Ontario, followed with a paper entitled "Reflexes in Psychiatry." He began by saying that in the last quarter of a century a large number of the medical profes-

sion has taken to so-called specialties, and that as far as diagnosis and surgical treatment were concerned, these were advantageous to the patient, but the result was rivalries and controversy in respect to the merits the different special branches bore in relation to general health. These circumscribed practitioners had much assurance in claiming the successful treatment of the diseased organ of which they know the most, as being the one thing necessary to ensure bodily and mental health. The first error which led to this lopsidedness was that they forgot that a specialty, to be successful, must be based on a thorough knowledge of the whole human organism in health and disease. The second error was that such people attach too much importance to reflex action in disease. The third error, which is allied to the second, lies in a misunderstanding of the term "reflex action." A true reflex circle must have three distinct neural structures, an afferent nerve, a focal nerve cell or cells, and an efferent nerve. In many diseases we have what the Germans call "associated sensations," or "co-sensations," where the influence generally ends in some part of the great nerve centres, with no direct outward stimulation, and so cannot be called reflex. A large number of diseases found in organs are only made manifest in these organs, and are caused by disease of the nerve centres and their ramifications. Dr. Clark then referred to surgical gynæcology, and said that too much prominence was given to diseases of the pelvic organs as a cause of insanity. His experience showed that not more than three and one-half per cent. of female patients have any serious derangement, yet at least forty per cent. are certified as having become insane through this cause. Extirpation of the ovaries was a prolific cause of insanity and not a cure. Dr. Clark concluded with quotations from the writings of Dr. Bremer, Dr. Allbutt, and Dr. Skene in support of his views.

Dr. Campbell (Carlisle, England) thanked Dr. Clark for his lucid, definite paper, and said that even asylum physicians were occasionally affected by waves of treatment.

The next paper, on "The Influence of Physical upon Mental Disease," was read by Dr. W. J. Handfield Haslett, of Halliford House, Sunbury-on-Thames. He said that his subject was an obscure and difficult one, but feeling that it possessed great

possibilities of investigation, he brought it before the Section hoping to kindle their interest in it. Nearly a half a century ago Prof. Griesinger, of Berlin, recorded the effects of epidemic diseases upon the insane. He found that after an extensive outbreak of typhus among the insane at Schleswig there was a permanent beneficial influence in a large number of cases, and equally manifest in mania and melancholia. Cholera had an unfavorable effect, and dysentery had no influence at all, not even on attacks of periodical insanity. Koster, of Siegburg, studied the effect of intermittent fever upon the insane, and out of twenty-four patients attacked, seven recovered from their insanity, seven improved very much, and ten cases of advanced dementia remained unchanged. Dr. Haslett had seen four cases of intermittent fever among the insane, and in only one did it have any effect. In this, a case of paresis, a complete remission of symptoms occurred when there was a recurrence of fever. In cases of fatal illness among the insane there is often a clearing up of the intellect before death. This has been observed in stuporous and delusional patients, and Hoffman asserts that this occurs in cases of advanced dementia, but this is inconsistent with our views on cellular pathology. Savage says that diseases which produce temporary or permanent cure are either febrile or painful, and this is probably correct, as most diseases are one or the other or both. Influenza and cancer are notable exceptions to this. With regard to the effect of influenza upon the insane, the physicians of the Royal Edinburgh Asylum reached the following conclusions: First, there was frequently an aggravation of mental symptoms. Secondly, in no recorded instance did influenza produce any mental improvement in the patient. Lastly, insanity as a sequela to influenza in the sane was of an evanescent and curable nature. Schmitz agrees with this, but Dr. Haslett found cases in which this was a most intractable cause of insanity. Dr. Haslett then discussed boils, suppurating wounds, etc., and their effect on the insane, and also the mental diseases in which mental improvement most frequently followed an intercurrent physical disease, concluding with the following summary:

That febrile, suppurating, and sudden diseases are most likely to produce benefit, particularly boils, carbuncles, erysipelas, and some of the specific fevers.

That protracted and debilitating and wasting diseases, producing anemia and loss of blood, rarely produce any mental improvement. That the purely convulsive neuroses are rarely capable of any amelioration in this way.

That stuporous mental states and the second stage of acute attacks are most readily influenced for good.

Lastly, that the evidence chiefly points to the influence being produced by unwonted afferent impulses produced by the abnormal peripheral irritation.

The President said that his experience was opposed to the theory that operations were followed by recovery simply as an effect of the operation, regardless of the condition necessitating the operation. He had once reported a case in support of this, but the case had now relapsed. Dr. Spitzka said that in Dr. Israel's clinic he saw a case in which a skin-deep incision had been made and the patient believed a serious operation had been performed. This was followed by recovery. The discussion which followed again reverted to the relation between pelvic diseases and insanity, and the value of gynæcological operations for the relief of mental symptoms, which was a continuation of the discussion on the papers of Drs. Rohé, Hobbs, and Russell, which had occupied so much of the previous session. It was participated in by Drs. Clark, Dewey, Burgess, Brush, Urquhart, Alexander, and others. The view that found most favor was that surgical interference with the genital organs of insane women should be practised only when the same indications were present which demanded operative procedure in the sane. The meeting then adjourned until Friday.

The concluding day of the meeting, Friday, September 3d, was opened with a paper on "Some New Clinical Studies of Inebriety," by Dr. T. D. Crothers of Hartford. He said that from sixty to seventy per cent. of all cases are traceable to heredity, that is, the ancestors have been inebriates, insane, epileptics, or neurotics. Beyond heredity, injury and disease are traceable as causes. In a certain number of cases a long prodromic stage of moderate drinking precedes the excessive use of spirits; in others the excessive use begins at once.

The forms of inebriety are practically the same as those of insanity. The periodical, convulsive, epileptiform, and the

delusional and confusional manias and dementias are most common. Paretic delusions of vigor, strength and power to refrain from using spirits are common to nearly all cases. They also develop degrees of moral palsy or a deficient sense of right and wrong. The higher brain centres are broken up, and there is profound impairment of the brain. Sensation is impaired. Sight, hearing, taste, smell, touch and sensation of heat and cold are lowered and palsied. Memory, ideation, attention, time reaction and perception are diminished and enfeebled. The faulty delusional reasoning follows naturally from the operation of the faulty senses. The heart and other organs are similarly deranged. Shock and other psychic disturbances are often followed by inebriety. In some cases where alcohol is used continuously it seems to prevent the outbreaks of violent manias, or of epileptic attacks. The specifics which destroy the craze for drink in one day, or four weeks, are empirical. Hospital treatment extended over a long period is the only scientific method of cure. The cases which can be restored to health form twenty to thirty per cent. of all cases. Inebriety is often a symptom of some exhaustive irritation which, when discovered and removed, constitutes a cure. Finally, statistics and clinical studies of cases make it clear beyond all doubt that inebriety is insanity, obscure and masked, starting from the same range of physical causes, following the same lines of progress, and curable in substantially the same way.

Dr. D. Clark thought that the notion of a latent explosive taint which was fired by alcohol very possible. The President recalled cases where a man suddenly took to drink and as suddenly gave it up. Such cases finally become chronic drunkards.

Dr. James Russell, of Hamilton, Ontario, then read a paper entitled "The Relation of Insanity to the State," which began somewhat fancifully with a visit of a traveller from Mars to the earth. This Martian, after seeing the earth pretty thoroughly, would telegraph to the Mars Gazette that the most splendid evidence of our Christian civilization was the ample provision for the insane. Dr. Russell then gave some statistics from official returns. The Commissioners of Scotland report from 1859 to 1896 an increase of thirty-seven per cent. in population, and an increase of private lunatics of ninety-seven per cent., of criminal

ninety-six per cent., and of pauper one hundred and thirty-nine per cent.; a total increase of one hundred and thirty-two per cent. The Commissioners for Ireland only furnish returns from 1880 to 1895, which show a decrease of population of twelve per cent., while private lunatics increased twenty per cent., criminal lunatics decreased eight per cent., pauper lunatics increased forty-three per cent.—total increase forty-one per cent.

The United States Census from 1880 to 1890 shows an increase in population of twenty-four per cent., and an increase of the insane of all classes of nineteen per cent.

In Canada the census returns give one lunatic to every three hundred and sixty-one of the population. There are no comparative returns available. In the Province of Ontario the census and provincial returns show an increase of population from 1871 to 1895 of thirty-six per cent., while the increase of insane for the same period is two hundred and forty-five per cent. While the greater accuracy of registration will acount for a part of this increase of the insane, there are deeper and more potent causes. The latter half of the present century has witnessed a tremendous revolution in moral, social and physical dynamics. A new king has arisen who knows not the common people, the king of mechanical force. Steam and electricity, with the multiplicity of purposes to which they are applied, have so usurped the ranks of labor that multitudes are thrown out of employment, and many of them, unable to adjust themselves to the altered conditions of the labor market, become a charge on the various charity organizations, which is the first stage of physical and mental degeneration. The rise of plutocracy, with its power of concentrating wealth, has increased the ever widening breach between capital and labor, and the couplet—

> "Ill fares the land, to hastening ills a prey,
> Where wealth accumulates and men decay."

may well be applied. The popular opinion of the day is that the vast increase of insanity is due to the restless spirit of the age, the intense competition in business, and the break-neck struggle for wealth, place and power. There is an element of truth in this, but to rank it as a great predisposing or exciting cause of insanity is merely a popular fallacy. Statistics show that the great increase in insanity comes from the pauper class, and that

it has decreased in the private class. Heredity and vice account for a large proportion of the mental alienation of the present day. The curse of drink has done much to demoralize the human race mentally, morally and physically. The scourge of syphilis has been the most deadly enemy to the upward progress of the human race the world has ever seen. Its peculiar affinity for attacking the brain and nervous system is one of the marked features of its history. The fatal form of insanity known as general paralysis of the insane is now recognized by high authority as in every case to be due to this virulent poison. Various remedies have been proposed to stem the tide of ever increasing mental degeneration. Some would prohibit marriage among degenerates and criminals; others advocate the asexualisation and emasculation of these classes, while others would confine them for life in institutions to be erected and maintained by the State. Dr. Russell was not enamored with any of these; he thought the further elevation of the human race must be along the same lines and through the operation of the same laws which had governed the universe in the past. Two great factors would bring about the desired elevation. The first was education, which would develop the mind power and fit every person for the highest duties of citizenship. The second was the division of land, so that the masses should enjoy a larger share of the wealth-producing power of the world. It is the unequal distribution of wealth and the stern struggle with poverty which is the millstone about the neck of the masses that is dragging them down to mental, moral and social degradation. It was a pleasure, however, to turn from this pessimistic view to the development of that splendid altruistic spirit of the classes, which was doing so much to ease the distresses of the masses, but we sighed for a greater equality, the equality of opportunity.

Dr. Campbell quoted the case of a woman who, in four generations, had some five hundred descendants, who had cost the State of New York some one hundred million dollars, every descendant being either criminal, prostitute, or insane. Dr. Clark spoke of the position held by syphilis in the causation of insanity. He thought its influence over-exaggerated. Dr. Urquhart spoke of the Scottish tradition that once all epileptics were castrated, with the result that there are extremely few epileptics now in Scotland.

Dr. Brush said he regretted that no one had touched upon the sociological questions involved in Dr. Russell's paper. He felt that he could not let the remarks of the essayist pass unchallenged. Whatever might be thought of the statistics which Dr. Russell presented, showing the disproportionate amount of insanity among the so-called pauper classes as compared with the insane cared for at private expense—and he believed they were susceptible of an explanation widely at variance with Dr. Russell's views—he felt that what the doctor said of inequality of opportunity, the oppression of the poor, and the millstone which was dragging down the masses to mental, moral and social degeneration, should meet with a decided protest from this audience and at least on this side of the Atlantic.

If Dr. Russell read the history of his own country aright, and compared the condition of the masses of those who gained their daily bread by the sweat of their brows at the present time, with that of the same class, let us say in the time of good Queen Bess, he must know that as far as opportunity of earning and enjoying all that made life worth living, the laboring man of to-day was in the position of the ruler of that time. He was better housed, better fed, better clothed, and could, without cost, give his children a better education than was then obtainable by the sons and daughters of the wealthy.

It is not equality of opportunity that is needed to lift up the pauper to the level of the rich man, but equality of ability. From the earliest days of the history of man there have always been those who have "seized the skirts of happy chance," and those others who, with equal opportunity, had not the equal ability or the equal courage of their convictions. Much of the alleged discontent of the masses—and the speaker did not wish to deny that, unfortunately, much existed—was fomented and sometimes created by publication of just the sentiments to which Dr. Russell had given utterance, and it was time that a protest should be entered by some one.

Dr. Van Gieson, of New York, then made an extempore address on "The Parenchymatous Degeneration of the Nervous System in Locomotor Ataxia." He showed that parenchymatous degeneration in nerve cells was the same as in other organs. This parenchymatous degeneration was caused by poisons, especially by

alcohol. It could be made out readily in microscopical sections. As there was no report made of his remarks, a fuller abstract cannot be given. Dr. Urquhart thanked Dr. Van Gieson for his admirable address. He considered the work done by Dr. Van Gieson to be most important to them. He asked Dr. Van Gieson's opinion on the work done by Dr. Hutchinson, who had found vacuolation of the cells in the brains in the sane. The speaker did not feel surprised that such degeneration should take place in chronic exhausting disease. Dr. Van Gieson regretted that there was not sufficient time for him to answer Dr. Urquhart's question. The meeting then adjourned *sine die*.

SECTION OF PHARMACOLOGY AND THERAPEUTICS.

At the recent meeting of the British Medical Association held at Montreal, a very interesting discussion was held in the Section of Pharmacology and Therapeutics on the Treatment of Insomnia. Dr. Charles K. Clarke, Superintendent of Asylum for Insane at Kingston, Ontario, opened the discussion with some considerations of the physiology of sleep. The majority of writers seem to agree that during normal sleep there is a vascular dilatation of the skin, and a consequent lessened blood supply in the cortex. Howell, of Johns Hopkins, advances a new theory, and in the Journal of Experimental Medicine, Vol. II, No. 3, says in part, that "the fall of blood pressure is due to a relaxation of tone in that portion of the vaso-motor centre controlling the skin vessels. The periodicity of sleep is, therefore, directly connected with a rhythmic loss and resumption of tone in the vaso-motor centre, etc. During the waking hours the vaso-motor centre is in uninterrupted activity, and the result must be the production of a condition of fatigue in this centre proportionate to the amount of stimulation. If the fatigue is sufficiently pronounced, the centre will relax and sleep ensue in spite of even strong sensory or mental stimuli. If the fatigue is less marked, as is normally the case at the end of a waking period, adequate relaxation takes place only after the withdrawal of sensory and mental stimuli, and our voluntary preparations for sleep consist essentially in devices to minimize these stimuli." Whatever the exact cause of sleep, it seems to be proved beyond doubt that during normal sleep there is cerebral anæmia with corresponding vascular dila-

tation of the skin, and in directing treatment in many of the forms of insomnia we should take cognizance of this fact. Germain Sée's classification of insomnia seems to be very generally adopted. This is as follows: 1, Dolorous; 2, digestive; 3, cardiac and dyspnœal; 4, cerebro-spinal and neurotic (general paralysis, acute and chronic mania-hysteria-hypochondriasis); 5, psychic insomnia; 6, insomnia of physical fatigue; 7, genito-urinary; 8, febrile and autotoxic; 9, toxic. It is with the cerebro-spinal and neurotic cases that we are chiefly concerned, and in regard to these there is the greatest difference in treatment. Long ago Dr. Joseph Workman pointed out that there was little to hope for from the protracted administration of hypnotics, sedatives and narcotics in these cases, but that, on the contrary, we might look for unsatisfactory results. In a general way this is correct, and possibly, as pointed out by Dr. E. N. Brush, the great danger in all these cases is the routine practice of giving hypnotics in insomnia. We are all alive to the fact that, in a sense, loss of sleep is more fatal than loss of food. Manassein has well shown this. We also know that a few hours of normal sleep are of more importance to the patient with acute mania than anything else. How shall this sleep be established? We have a long list of hypnotic drugs at our command, and each year this list receives many additions, but we have not yet the hypnotic panacea. If, as is claimed by Maurice de Fleury, attacks of insomnia are generally caused by either increase or decrease of arterial pressure, the failure of one particular drug to meet all cases can easily be understood. In the sleeplessness associated with acute mania, drug treatment is at times extremely valuable in the early stages, but if marked beneficial results do not occur almost at once, they will not appear at all, and harm will result from the drug treatment. It is better by simple physical means to restore normal arterial tension and restore sleep. The warm bath at 104° F. for twenty minutes, with cold applications to the head, has been very successful. Patients will sometimes fall asleep while in the bath. The danger of collapse during the warm bath is no greater than with some of our hypnotic drugs, and is less with a temperature of 104° F. than with 110° F., which is sometimes advised. A cup of hot milk or a hot toddy at bedtime is sometimes worth a dozen

doses of chloral. When the blood pressure is low, as in the insomnia of neurasthenia, massage, friction, douches, and, at the same time, caffeine and digitalis as heart tonics, will raise arterial pressure and produce sleep. A. W. McFarlane, of Glasgow, says that habit plays an important part in the insomnia of healthy persons. They sometimes curtail their sleep unduly, to find, when the necessity is past, that they cannot sleep. Their brain cells have acquired the bad habit of activity when they ought to be reposing. For these overwrought and oftentimes nervous people, a glass of hot milk or a half-pint of bitter ale often answers every purpose. Sometimes it is necessary to arrange the patient's diet on a physiological basis, and regularity in the habit of retiring should be cultivated. Change of air is extremely valuable, and an outing under canvas in the northern woods will often work wonders. We must not forget, however, that insomnia is sometimes more than a bad habit, and may be a symptom of other trouble which we must find and the underlying cause of which must be treated. If neurasthenia is to be regarded as one of the autotoxic diseases—and there is abundant evidence to support this view—in all probability the effect will disappear with the removal of the cause. The same remarks apply to all cases of insomnia resulting from toxæmia. G. G. Van Schaick concludes that insomnia is an important complication of surgical disorders. Where pain is the chief factor, morphine is the drug most certain to relieve, but there is a strong feeling in favor of trional. Most writers believe that in the majority of cases of insomnia drug treatment is to be avoided if other more simple methods of inducing sleep are successful. They should certainly be tried before drug treatment, and in any case the condition of the arterial pressure should be studied and noted before any line of treatment is decided on.

Dr. Reynold Webb Wilcox, of New York, followed and said that insomnia was simply a symptom, and that he agreed with Patrick in the opinion that it might be the symptom of some latent brain disease which the conscientious physician would search out and treat, and not attempt to avert some indefinite and vaguely threatened disaster by attacking the insomnia alone. So, too, should there be circulatory changes, kidney disease, etc., these should be treated before the insomnia. Routine prescrib-

ing is utterly indefensible; equally so is the reckless administration of drugs. We desire sleep-persuading, not sleep-compelling, drugs.

What is the mode of action of hypnotics? That cerebral anæmia alone cannot cause sleep is evident when we consider what happens after a severe hemorrhage, producing a true cerebral anæmia, when wakefulness, not sleep, is a marked symptom. According to Howell, the three factors which combine to produce sleep are, first, a diminution of irritability, caused by fatigue, of large portions of the cortical area; second, voluntary withdrawal of sensory and mental stimuli involved in the preparations for sleep; third, the diminished blood supply to the brain. The chemical theories of sleep advanced by Sommer, Preyer, Pfluger or Cappie, who believed that there was, first, diminished molecular activity of the cerebral cells coincidently with capillary anæmia of the brain, and, consequently, second, that the brain occupied less space. These statements, in connection with the studies of Hodge twenty years later, which demonstrated that cell volume and contents diminished after fatigue, bring us nearer a working hypothesis for the action of hypnotics. The theory of the movement of the neuron as advanced by Rabl-Ruckhard in 1890, and later by Lepine, Duval, Ramon y Cajal and Decrum, is the most satisfactory.

The alkaloids hyoscyamine, hyoscine and scopolamine seem to possess a peculiar usefulness in the treatment of the insomnia of the insane, especially of those conditions characterized by excitement. Pellotin, the alkaloid of the Anhalonium Williamsii, a cactus found in Mexico, is a new drug of vegetable origin and seems to have value. The sleep produced is singularly calm and natural, and there are no unpleasant after-effects. Dr. Wilcox then discussed in detail the oxygen derivatives of the hydrocarbons, the sulphur derivatives of the hydrocarbons, urethanes and their derivatives, the amido derivatives, and concluded with the following classification:

1. Potency—Paraldehyde, chloralamide, pellotin, trional.
2. Rapidity—Pellotin, paraldehyde, chloralamide, trional.
3. Duration—Trional (longest), chloralamide, pellotin, paraldehyde.
4. Habituation—Pellotin (slight), trional, chloralamide, paraldehyde (considerable).

5. Safety—Chloralamide, pellotin, paraldehyde, trional.

The next speaker was Dr. Alexander McPhedran, of the University of Toronto, who spoke on "Hypnotics: their contra-indications and ill-effects." After briefly referring to the nature of sleep, the occurrence of which he said was probably due to an accumulation of fatigue products, neurotoxin, in the central nervous system, he gave a list of causes of insomnia which were removable, and in which class, therefore, hypnotics should never be used. In another large class the cause is not easily discovered nor easily removed, or it may be apparent and yet impossible of removal. Of such are many cases of neurasthenia, hysteria and hypochondria. We must be careful in this class that a habit is not formed. In acute diseases sleep is often a necessity in order to secure such a restoration of the vital powers as to render recovery of health, or even continuance of life, possible. Here hypnotics are often necessary. So often in chronic diseases there may be a temporary need of hypnotics.

Dr. McPhedran then spoke particularly of the injurious effects of several hypnotics. Chloralose in three-grain doses has produced an alarming collapse in an hour, the recovery from which was slow. Sulfonal is occasionally fatal, and is more apt to be in persons with marked constipation. The continued use of trional tends to give rise to various disturbances of consciousness, of speech, of hearing and of vision, to loss of memory and to ataxia of movements in general. Serious effects have followed the administration of paraldehyde in large doses. It is a wise practice to give hypnotics rarely and only when other means have failed, then only in the smallest dose necessary to give sleep, being satisfied with the least amount of sleep that is safe.

Dr. R. Ferguson, of the Western University, spoke first of the lack of any theory of sleep which stood the test of therapeutics. Those theories which are based upon the blood supply to the brain are the most satisfactory. Hot foot or hip baths will sometimes produce the necessary anæmia. Massage is useful. In certain cases there is an excitability which transforms slight disturbances into great ones, and the insomnia is most intractable. In certain cases it is the cessation of noises which causes the sleeplessness. The patient lies awake listening and waiting for them. This sort of insomnia is less exhausting than the same

period of enforced wakefulness under great pressure. Reading oneself to sleep, if the book be a suitable one, is a common and commendable device. A placebo, or half-placebo, as some of the mild hypnotics may be called, ought always to have a reputation, whether deserved or not, so that no harm may be done by their administration. A graduated series of powders, with sugar of milk to maintain the bulk and quinine to maintain the taste, beginning with a half dose of sulfonal and ending with none at all, is a convenient method of ridding the patient of the drug habit without the disturbing thought involved in the information that he must get on as best he can without it. Hypnotics may be roughly divided into two classes, those which permit and those which produce sleep; those which diminish nervous excitability, which keeps the patient awake, and those which distinctly, though perhaps not profoundly, narcotize the nervous centres. Dr. Ferguson then spoke of several hypnotic drugs, and stated his preference for sulfonal and trional, and, concluding, said that at best hypnotics were but makeshifts.

Professor Charles Richet, of the University of Paris, speaking in French, said that chloralose studied physiologically had the special effect of benumbing the brain and stimulating the spinal cord. In a dose of ten, or at most fifty centigrammes, it induced sleep and made the cardiac circulation regular and strong. It was therefore clearly indicated in diseases of the heart, and also, as it did not in any way disorder the digestion, in diseases of the stomach. It raised arterial pressure so that it could not be said that insomnia was due to cerebral anæmia.

Dr. Donald MacAllister, of the University of Cambridge, said that he had to deal with many students who worked too hard, in whom, when examinations were approaching, the addition of anxiety to mental overstrain led to insomnia. The treatment was conditioned by the necessity that nothing should be done which would interfere with mental activity or memory. He had been driven by this condition to abandon all hypnotic drugs in the management of these cases. Simple means, such as Benjamin Franklin's air-bath, mere walking about the room naked for a few minutes and then slipping between the warm blankets, or lying in a hammock with nothing but an over-covering, or wearing a night-shirt wrung out of cold water closely wrapped round with

a flannel blazer or pajamas, were generally adequate. But there were certain cases which were overfatigued, and in these it was necessary to stimulate until the level of normal fatigue was attained. Dr. Richet's remarks as to the strychnine-like action of chloralose upon the spinal cord were of special interest to him, as in these cases strychnine was of great value. One-fortieth to one-twentieth of a grain of the hydrochloride at night was followed first by a sense of cheerfulness and then by normal sleep. A cup of strong coffee often served the same end.

Dr. Robert Saundby said that the most certain hypnotic drugs were chloral and sulfonal, and that their dangers were exaggerated. Chloral should be combined with tincture of digitalis in equal quantities. It was valuable in the insomnia of typhoid fever and in delirium tremens. In the insomnia of dyspepsia, which supervenes two or three hours after retiring to rest, a little bicarbonate of soda and peppermint water taken on waking will often give sleep.

Professor A. R. Cushney said that the chlorine compounds of the fatty series, chloroform, chloral and chloralamide, have been shown to produce fatty degeneration in various organs when given habitually to animals, and asked for information of any such effects following the administration of chloralamide and chloralose in man. The pharmacological effects of pellotin and chloralose resemble those of morphine closely. It would be of interest to find whether these newer hypnotics resemble morphine in its specific effects on pain.

Dr. Henry Barnes said that the first question we should decide for ourselves is this: "Is the patient really suffering from want of sleep?" In procuring sleep the first thing is to remove all sources of anxiety. He referred to a form of sleeplessness described by Murchison which is caused by hepatic derangement, which induced lithæmia and other forms of gout. In these cases attention to diet is necessary. He preferred paraldehyde, sulfonal and trional, but used all drugs as little as possible.

Dr. A. A. McCallum referred to the action of Behring's serum in the non-diphtheritic in producing sleep, and also that patients treated by anti-streptococcic serum fell into a deep sleep.

Dr. Learned, of Northampton, Mass., described a method of inducing sleep which he had tried successfully upon himself. The

arms are stretched toward the headboard, inspirations reduced to six a minute, and the head is held about an inch above the pillow until it is impossible to hold it so longer. Then the right leg is raised until it is necessary to drop it. Various other strained postures are assumed and sleep invariably follows. The principal drawback is that it requires considerable mental and physical exertion.

Dr. J. A. Campbell, of Carlisle, referred to his papers on this subject published in the *Journal of Mental Science* in 1873, and in the *Lancet* in 1879 and 1883. He gradually gave less and less hypnotics, and chloral was the one most used. In asylums, one patient often has to be given a hypnotic in order that others may sleep. Exercise in the open air was one of the best hypnotics.

Dr. W. S. Muir said that in his hands hydrate of chloral had given the best results. He did not think that it should be given in larger quantities than two doses of twenty grains each. In the treatment of delirium tremens it should be combined with digitalis. Bromide of potassium and paraldehyde are also good hypnotics. Lately he had had good results from sulphate of duboisin, which has an action similar to hydro-bromate of hyoscin, but is, in his opinion, safer. The conscientious practitioner will tax his own resources to the utmost, and will particularly examine into the stomach and kidneys before giving hypnotic drugs.

Dr. J. O. Brookhouse, of Nottingham, was gratified that in the discussion the treatment of insomnia was not disassociated from its etiology. He was glad to find that there was a tendency to treat insomnia by fresh air, moral help, regulated exercise and a suitable diet rather than by drugs. If recourse to drugs was necessary he thought that a combination of morphine, chloral and sodium bromide was best.

Dr. W. Whitla expressed his pleasure in listening to the discussion, which would not have been possible twenty-five years ago in the days of empiricism. He then spoke of the various hypnotics and warned against their habit danger, especially condemning alcohol. He described a peculiar form of insomnia which occurred in patients who went to bed, fell asleep in a few moments and woke again in a few seconds. These patients, he noticed, were broad-shouldered men, and the symptoms were caused by the pillow difficulty. He recommended the German wedge-shaped pillow as a specific in that form.

Dr. Andrew H. Smith, of New York, said that twenty grains of powdered capsicum in the form of a bolus will generally produce sleep promptly in a case of delirium tremens, with no disagreeable after-effects until the next defecation.

Dr. G. A. Atkinson, of Newcastle-on-Tyne, said that errors of refraction cause mental irritation in neurasthenic patients and so lead to insomnia. In old people, who have been taking opium, and in whom there is defective arterial supply to the brain, beef tea, tea or coffee will act well and sometimes entirely replace the drug.

Dr. J. J. Leech, president of the section, said that a marked feature of the discussion was the agreement of the speakers that in the treatment of insomnia drugs should be avoided as far as possible. While agreeing with this in part, there were certain cases in which the use of drugs could not be avoided. These were middle-aged persons with gouty or neurotic tendencies, immersed in business and overworked. He then described in detail his treatment of this class and spoke of cases who had almost continuous insomnia.

Book Reviews

Hysteria and Certain Allied Conditions, Their Nature and Treatment, with Special Reference to the Application of the Rest Cure, Massage, Electrotherapy, Hypnotism, etc. By GEORGE J. PRESTON, M. D., Professor of Diseases of the Nervous System, College of Physicians and Surgeons, Baltimore. Illustrated. Philadelphia, P. Blakiston, Son & Co., 1897. (pp. 298.)

The author gives as his reasons for writing the book under consideration the importance of the subject, and the fact that there is no recent book in English on hysteria. It is intended especially for general practitioners, and it is well adapted to their wants. The reader who has kept abreast of the periodical literature of the subject will not find much in it that is new to him, but, on the other hand, he will not miss much that is of practical importance. The book gives evidence of extensive reading, but it is by no means a mere compilation. It indicates throughout thorough practical familiarity with the subject in all its bearings.

In the chapter on the nature, etiology and pathology of the disease, he takes what seems to us the only tenable ground, that the disturbance is primarily in the higher cerebral centres. Its precise nature he does not claim to understand, but he conveys the impression that it is essentially a deficiency of action—a lack of sufficient stimulus to the subordinate elements of the nervous system. He looks with favor on the hypothesis of a power of motion in the processes of the nerve cells, thus making and breaking connections, and seems rather sanguine that, with improved technique, it may be possible to discover the precise anatomical changes in the nerve cells to which the morbid phenomena are due. In view of the fact that symptoms that have existed for years may vanish instantaneously and permanently, it seems to us rather doubtful, to say the least, whether there are any anatomical lesions that are likely to be persistent after death.

It does not seem to us that a mere inefficiency of action, whether local or general, is enough to account for all the phenomena of hysteria, however satisfactory it may be in respect to hysterical paralysis, in which connection the author principally considers it. In many cases there seems to be abundant evidence of activity of the cerebral centres, perverted in kind, it is true, but not inferior in amount, to what is manifested in health. Take, for instance, the phenomena of spurious pregnancy and other phantom tumors. There is evidently a positive influence emanating from the brain of a sort that most healthy persons are incapable of exerting. The pertinacity with which hysterical patients will maintain a

course of deception, in spite of the most painful results to themselves, points rather to a misdirection than an enfeeblement of voluntary power.

In endeavoring to understand the disturbance of volition, which is probably always present in hysteria, it should be borne in mind that an act of the will really involves several mental processes. There is the desire of some imagined change, and the thought of an action as practicable and adapted to bring it about. If the desire is strong enough, and the object is thought of as immediately attainable, the movement takes place. But it has long been recognized, by psychologists and moralists alike, that the mere thinking of an action has a tendency to excite it. In the hysteric this element seems to be exaggerated. In the case of a spurious pregnancy, for instance, the thought of an enlargement of the abdomen is enough to produce it. It should be remembered that in voluntary action we have in mind only results, while we may be entirely ignorant of the mechanism by which they are accomplished. In speaking we have in mind the sounds we wish to produce, not the movements of the muscles of the chest, larynx, palate, tongue and lips. Except that it is more unusual, it is no more unintelligible that thinking of an abdominal tumor should have a tendency to produce an actual tumefaction, than that thinking of a word should tend to produce its utterance. On the negative side, again, if a healthy person can be absolutely convinced of the impossibility of an action it is impossible for him to will the act. In the hysterical patient the mere thought of the impossibility of walking, of speaking aloud, of swallowing, seems to be enough to procure its realization. There is apparently a similar condition of affairs in regard to sensation. The limitations of the fields of hysterical anæsthesia, entirely different from the distribution of the nerves, the phenomena of transfer, etc., indicate the inordinate share that the imagination has in their production.

Doubtless, whatever interferes with the proper conduct of life must, in a sense, be reckoned as weakness, but most physicians can probably recall instances in which hysterical energy, when turned into useful channels, has accomplished exceptionally valuable work, and it seems to us that the defect lies more in the unreliability of, than in the deficiency of cerebral action in many of these cases.

There is not much in the chapters on symptomatology that calls for comment. The author considers anæsthesia the most characteristic and important symptom of hysteria, although he does not go so far as to say that it is always present. He quotes, without comment, the statements of Mitchell and De Schweinitz that achromatopsia is not found in American cases. The reviewer has seen a case in which, with extreme narrowing of the visual field, there was, if the statements of the patient could be trusted, absolute color-blindness. The author seems to have found the major convulsive attacks—so-called hystero-epilepsy—more common among negroes than whites in this country. The whole account of the symptomatology is very satisfactory, but we notice an absence of any full discussion, either under this head or that of diagnosis, of the

traumatic neuroses. We incline to think that he would consider the symptoms observed after railway accidents and similar shocks, neurasthenic rather than hysterical, but in view of the eminent authorities who have attributed them to hysteria, it would seem that the subject deserved discussion in a systematic work on that neurosis.

In treating of diagnosis, the author recognizes the fact that it may often present great difficulty, and calls particular attention to the danger of overlooking organic disease in an hysterical patient. He lays down the proposition that "the diagnosis of hysteria should never be made with certainty without the presence of some of the well-known somatic stigmata, such as anæsthesia, hyperæsthesia, paralysis, contracture, special sense disturbance, and the like." He calls attention to the value of anæsthesia of the cornea in hysterical amblyopia.

In regard to treatment he says: "The general practitioner, for whom this book is specially intended, not only wants to know to what class of cases the rest cure, massage, electricity, etc., are applicable, but also how these important therapeutic measures are to be carried out. Hence the sections on these and other modes of treatment are prepared with some attention to detail." This statement is borne out in the text. The directions for treatment are full, clear and precise. He lays much stress on prophylaxis, in the cultivation of wholesome habits of life, and, when practicable, removal from unwholesome influences. He considers suggestion the most important element in whatever scheme of treatment may be adopted, and urges that all remedies should be administered in as impressive a manner as possible. Apart from their mental effect on the patient, he has but little confidence in any specific effect of drugs in this condition. Electricity, also, he considers chiefly valuable as a suggestive measure, although often very useful in that direction. He has a much higher estimate of the value of massage, and especially of hydrotherapeutic measures, and is a strong advocate of the rest cure in all its details as prescribed by Mitchell, for appropriate cases. Hypnotism he finds, on the whole, rather disappointing, although it sometimes gives brilliant results. Although he is inclined to favor the views of the school of Charcot as to the close affinity, if not identity, of the phenomena of hypnotism and hysteria, he finds that a very large proportion of hysterical subjects are incapable of being brought under hypnotic influence sufficiently for therapeutic purposes, and that the relief of hysterical symptoms in this way is apt to be transient.

He finds little to say in favor of surgical interference in this class of cases. He is never weary of insisting that the seat of hysteria is in the brain, and cannot be removed with any peripheral organs, although he recognizes the fact that hysterical symptoms may be excited and perpetuated by irritation elsewhere. The use of the knife for the relief of hysterical contractures he considers entirely unwarrantable, as they will pass away completely with the relief of the nervous condition. He is especially severe on the removal of healthy ovaries in such cases, and believes that the favorable results of such operations, which, so far as

his observation extends, are usually transient, are due entirely to suggestion. On the other hand, he fully recognizes the propriety of paying special attention to any actual disease of the reproductive organs in hysterical subjects.

Enough has, we hope, been said to show that the book is a valuable one for any one who has—as what physician has not?—to deal with this class of cases. We bespeak for it an extensive circulation.

A Text-Book on Mental Diseases, for the Use of Students and Practitioners of Medicine. By THEODORE H. KELLOGG, A. M., M. D., late Medical Superintendent of Willard State Hospital, Former Physician-in-Chief of New York City Asylum for the Insane, Former Physician in Charge of Sanford Hall Private Asylum, Former First Assistant Physician of Hudson River State Hospital, and of New York City Asylum. New York: William Wood & Company, 1897.

Dr. Kellogg's octavo volume of nearly eight hundred pages is the most pretentious American medical work on insanity since the appearance in 1846 of Dr. Galt's encyclopædic treatise, and, indeed, the tendency of these contributions to the treatment and therapeutics of insanity induces a comparison not uninstructive after the lapse of a half century. Both authors feel the necessity of urging supporting and sedative treatment, and unite in condemning depletory methods; both bear witness to the prevalence of the former in institutions for the insane, but the writer of fifty years ago addresses his warning to the offending practitioner outside of the asylum, while he of the present makes the contrast only in the interests of history.

Dr. Kellogg's varied experience in large public and private asylums and in private practice has equipped him to approach the subject from its various sides, and his attempt has been "to introduce such clear and systematic subdivisions as would best tend to facilitate the comprehension of the whole subject and render the work available for students and practitioners of medicine. . . . The whole work is written independently of leading philosophical or medical hypotheses, and is the clinical rendition and general outcome of the writer's experience in psychiatry." His book may be truly characterized as an elaborate treatise on insanity.

The volume is divided into two parts, the first on "General Mental Pathology," and the second on "The Special Groups and the Typical Forms of Insanity."

In the first chapter on "The History of Insanity," is condensed a quantity of information representing an enormous amount of research. In a few short paragraphs the epochs of progress are considered, with the gradual evolution from barbarism of the present humane methods, originating in the establishment of wards for the insane in 1660 in the Hôtel Dieu, Paris; in 1675 in a large asylum at Moorfields, England; in 1681 in an asylum at Avignon, France, and in 1751 in the creation of the Pennsylvania Hospital, with provision for the reception and care of lunatics. The preparation for this systematic medical treatment of insanity

had been made in the seventeenth and eighteenth centuries by the writings of Willis, Vieussens, Boerhaave, Denis, Bonet, Sauvage, Cullen, Brown, Marshall, Cox, Crichton, Haslem, and Arnold; and the groundwork of its further development, as is well known, was laid by the energy of Rush, Tuke, and Pinel, and the earnest convictions of Esquirol, Guislain, and Conolly. An interesting contribution of historical value which the author appears to have overlooked, is that made by Dr. Balfour upon the practice of the Arabs of the eighth century, in which appears a remarkable passage from an Arabian writer, Shaik la Ajab, summarizing the principles upon which he worked: "Be it known that of all remedies, to strengthen the heart and brain is the safest and most sure, by which means the mind and action are guided aright. Do nothing to frighten a patient, and let him select his own employment. Make the senses a special subject of treatment, and occasionally give stimulants. Rest and fresh air are required for the miserable men afflicted with insanity. They should be shown every possible kindness; in fact, they are to be treated by those under whose care they are placed as if they were their own offspring, so as to encourage them to place confidence in their caretakers and communicate their feelings and sufferings to them. This will be at least a relief to those unfortunates, and a charity in the eyes of God."

The succeeding ten chapters are upon "The Statistics of Insanity," "The Nosology of Insanity," "The Etiology of Insanity," "The Evolution, Stadia, Clinical Progression, and Termination of Mental Disorders," "Psychical Symptomatology," "Somatic Symptomatology," "Pathology of Insanity," "The Diagnosis of Insanity," "The Prognosis of Insanity," and "The Treatment of Insanity."

Throughout these chapters the author has avoided expression of strong personal opinion. The sections on semeiology and treatment attract special attention on account of the refinements and completeness of their observation. The regular order in insanity is divided into four stadia: 1. Stadium cœnæstheticum; 2. Stadium actum; 3. Stadium debilitatis; and, 4. Stadium terminale. In the descriptions of these stadia which follow, remarkable precision is shown in the finer changes of mental and motor function. The distinction is drawn between the cœnæsthesis of the initial stadium and a genuine stadium melancholicum, and a plea entered against the too commonly accepted doctrine of an initiatory melancholic stage, even in cases of mania. "Knowing that this initial stadium is based physiologically on the cœnæsthesis, which is painful on account of the general morbid processes active in the system at this time, the psychopathic state of depression which prevails during this stadium cœnæstheticum is readily understood, and the incongruous supposition of melancholia as the prodromal stage of mania is avoided." With reference to present fashionable theories relating to the stigmata of degeneration, the author writes: "Like other scientific novelties, they have excited in some minds too great credulity, and as tests of mental disease they are not decisive of any diagnostic point further than the fact of individual

origin from a degenerative source, and they do not even warrant this conclusion unless the structural anomaly has attained such a degree as in some measure to impair the functional activity of the organ or part in question. Men of vigorous minds and great talent often have some stigmata with asymmetrical heads and faces, while imbeciles not infrequently present a singular symmetry of cranial and facial conformation, so as to furnish an actual type of physical beauty."

In the matter of the medico-legal status of aphasics, the author believes that the testamentary capacity of persons afflicted with pure motor aphasia cannot be questioned, and cases of sensory aphasia are not to be considered insane from the mere fact of word-blindness and word-deafness. "But if there be in addition incoherence of ideas and of speech, the intellect is evidently so far impaired that the diagnosis is extremely difficult, and the probability is that the sufferer is at least medically insane."

For the prophylaxis of insanity the author writes comprehensively upon the early life and education of children, marriage, and the adult relations of life, and suggests the following measures for State intervention:

"1. The State should disseminate sound medical knowledge among all classes as to the common causes of insanity and the modes of its avoidance, and this should be accomplished by free lectures and the distribution of reliable medical literature on this subject.

"2. The State should make it compulsory on all medical schools to establish a professorship of mental disorders, and to hold, not a nominal, but a full course of lectures on this subject, demonstrated fully by clinical material. The State examination for the degree of Doctor of Medicine should always embrace the subject of mental diseases, with clinical and practical, as well as theoretical, tests.

"3. The State should establish voluntary reception hospitals, in which sufferers from incipient symptoms of mental disease could receive prompt, skilful advice and relief, which would prevent attacks of insanity.

"4. The State should establish a bureau of protective aid for those discharged recovered from hospitals for the insane, as well as for those under some great temporary stress of mind or body liable to end in insanity."

Part II contains twelve chapters on "The Special Groups and the Typical Forms of Insanity." The classification adopted is largely ætiological, and brings out most forcibly the relation of physical and mental disorders, and the great dependence of methods of treatment upon the principles of general medicine. There is little for criticism in this section. The author appears to have passively accepted the common doctrine of the seriousness of the climacteric period. The tendency of recent literature, well represented by Dr. Currier's monograph on the "Menopause," is in the line of depreciating sensational theories of this great physiological crisis, and we believe that Dr. Mitchell has found, in a review of several thousand cases of insanity, not only that insanity beginning between the ages of forty-five and fifty is less frequent than at other periods of life, but that more cases occur at this time in men than in women.

The advent of a new book on insanity is an occasion for congratulation, especially when its author comes from the ranks of the Association. For the specialist, Dr. Kellogg's book will prove a work of ready reference to what is approved in hospital practice; for the general profession, as indicating without partisan bias what has been developed in the therapy and in the study of the physical basis of insanity, it will do much to remove the atmosphere of mystery and doubt with which the management of the insane has always been surrounded.

Clinical Manual of Mental Diseases. For Practitioners and Students. By A. CAMPBELL CLARK, M. D., F. F. P. S. G., Mackintosh Lecturer on Psychological Medicine, St. Mungo's College, Glasgow; Medical Superintendent of Lanark County Asylum, Hartwood. University Series. London, Bellière, Tindall & Cox, 1897. (12mo, pp. viii, 484.)

The author states, in his preface, that "The preparation of this work, which is necessarily limited in its contents—published as it is for general practitioners and students—was undertaken because of the new regulations, which make mental diseases a compulsory subject of medical study." The work, therefore, should be judged as a text-book.

Apart from accuracy, which is, of course, the prime requisite in a scientific work, the principal merits of a text-book are clearness and precision of statement. In these respects it does not seem to us that the present work excels. He starts out with the implication, which we suppose would not be universally accepted, that metaphysics is the same thing as psychology, and the statement that "To the average student the study of mind is wearisome and unprofitable" (p. 9), and the chapter on Mental Constitution does not seem to us calculated to relieve the study of this opprobrium. The chapters on diagnosis and prognosis precede the discussion of the different forms of insanity, and he does not there, nor, so far as we have noticed, elsewhere, make it clear whether he considers insanity one disease or several, or a symptom of different morbid conditions.

In his classification he is in advance of most British writers on the subject, admitting "Partial, or Chronic Delusional Insanity" as distinct from mania and melancholia, but he does not recognize confusional insanity under any of the terms which have been applied to it, nor does he give any adequate account of mental confusion as a symptom. Our old acquaintance, Insanity of Masturbation, is discussed at considerable length. In treating of insanity of adolescence, one of his sub-classifications is "The Masturbators, who are really Degenerates." Would such cases be examples of the insanity of masturbation? In speaking of climacteric insanity, he observes that "in the female, melancholia, mania, and chronic progressive insanity appear in about equal proportions." Are these all different manifestations of the same disease, and if so, are they essentially different from cases showing the same symptoms at other periods of life? In senile insanity likewise, he recognizes, following Fuerstner, (1) functional psychoses; (2) organic psychoses

(organic dementia); (3) a group midway between the two. Of course both functional and organic psychoses may be senile, in that they occur in old people, but they are not the same disease, nor do they present the same symptoms.

The foregoing are, we presume, sufficient examples of a method of treatment of the subject which seems to us calculated to leave the student with confused ideas in regard to diagnosis and prognosis.

In his account of general paralysis he expresses the opinion that the type of the disease has changed, quietly demented cases having increased of late years. We should be inclined to lay the change to greater accuracy of diagnosis. He attaches small importance to syphilis as a cause of this condition.

He omits pathological anatomy entirely, on the ground that the whole subject requires revision, as identical lesions to those supposed to be pathognomonic of various forms of insanity have been found in the brains of sane persons. Granting all that may be said on this score, we do not believe that changes, such as are found in advanced general paresis, for instance, deserve to be entirely passed over.

There are brief reports of cases illustrative of the various conditions described, for the most part well selected, and numerous photographs of insane persons, as good as such photographs generally are. We doubt if an expert could make a diagnosis from them in any very large proportion of cases.

On the whole, the book does not seem to us specially well adapted to the wants of the class of readers for whom it was designed, nor calculated to increase the knowledge of specialists.

The Psychology of the Emotions. By TH. RIBOT, Professor of the College of France, and editor of the *Revue Philosophique.* (Scribners, 1897.)

We have here one of the most important treatises, upon its subject, yet written. For alienists, because of its physiological standpoint, it should have special interest. As a compendium of its field to date it leaves little to be desired. We could expect nothing less substantial from M. Ribot, ex-Premier of France, and the leading psychologist among his countrymen.

The book is a revolt against the old notion that all feeling rises from the "stress of relations" obtaining between our primary perceptions and ideas. M. Ribot looks upon them as "the direct and immediate expression of the vegetative life"—"one emotion differs from another according to the quality and quantity of these organic states"—"complex emotions are derived from simple ones, and the latter from needs and instincts."

Since "all pleasures, pains, emotions, and passions," are derived genetically from these primitive instincts, the author attempts a chronological grouping of this development. The first group is essentially physiological; it includes the nutritive processes, breathing, secretion, excretion, and the like. The second group is "psycho-physical"; it includes "all the forms of external perception; the tendency of each sensory organ to

fulfil its function; . . . also all the forms of muscular movement, tendencies to action, to the production of noises (vocalization), gestures, and bodily attitudes." These tendencies, if satisfied, are agreeable; if obstructed, are unpleasant. "Hence result pleasure and pain, but not emotions so-called." These last make their appearance in the third group, and "embody one's needs as a spiritual being in the same way that breathing, hunger and thirst, embody his needs as a living being." Proceeding specifically with these "true emotions," and still in "chronological order," the author finds: (1) The instinct of conservation under its defensive form expressed by fear and its varieties. (2) The same instinct under its aggressive form, *i. e.*, anger and its derivatives. (3) The sympathetic (non-sexual) tendencies. These three "form the first story of the building."

Then appear "slower," and with "more restricted circles": (4) The play instinct; the tendency to expend superfluous energy, from which he derives (*a*) physical exercise, (*b*) adventure, (*c*) gambling, (*d*) æsthetics. The next tendency (5) is that toward knowledge; curiosity and attention at first, but at a later stage producing all the intellectual sentiments. (6) The egoistic tendencies, showing consciousness of self, pride, etc. The latest in date is (7) the sexual instinct. "Such are the tendencies which, in my opinion," says the author, "are the roots of emotion, simple or compound. This assertion will be justified, or invalidated, by the following studies." Whereupon follow successive chapters under the above headings.

Already one may feel that all this is incongruous with the author's genetic biology, and in parts is a bit fantastic. If his book depended upon this "justification" it would be a flat failure. Its great value is elsewhere—in its wealth of learning and suggestion. Dipping deeper for an estimate of M. Ribot's fundamental doctrines, we find that he starts from the proposition that all emotions display a "double aspect." On the one hand are the "motor manifestations." On the other are certain psychic states. It is the former that are basal. These, besides movements and gestures proper, include such phenomena as blushing, tremors, changes in the secretions, etc. It is the essential feature of them all that they "are the result of *centrifugal* activities." It is here, we incline to think, that we come upon what is at once the *point de repère* of M. Ribot's view and of his crucial error. This last appears if we ask, centrifugal from what? From the brain activities causing these results is the only possible answer. Yet it is the marked feature of the book that it leaves these determinative activities almost absolutely out of account. Hence one gets the impression, for instance, that fear is *nothing but* an affection of the bowels plus an attitude.

This main theory is avowedly adopted from James and Lange. Now, besides the psychologic difficulties which have been drawn out, in sharp controversy, against it (and which, though sufficiently strong to persuade Prof. James to withdraw from his main position, are ignored by the present author), there are physiological reasons which are even more

pertinent against M. Ribot's peculiar thesis. That the brain is dominantly the seat of what he classes as the "upper stages" of instinctive conduct can scarcely be doubted in face of present biology. That these instinctive brain tendencies have their natural psychic concomitants, just as do other brain activities, is not less certain. The conclusion seems irresistible, therefore, that the ebullition of emotional feeling which a creature experiences on an appropriate occasion—say a chick at sight of a hawk—is much more essentially the counterpart of these instinctive activities, than "the sum of the sensations reverberating back from the centrifugal occurrences" which they incite. This, granting that these return sensations are important in amount at all—and here, again, there is grave doubt. There are good reasons why the brain should regulate the viscera to its varying needs. There are equally good reasons why the brain should be *protected from* "return" disturbances of the viscera. Apparently this is everywhere markedly the case. The entire bulk of exact clinical and experimental evidence goes to show that the viscera are incapable of any sensation but pain (Foster); and this looks as if the brain is "protected" in all cases save of urgent harm. Surely, if all but its painful activities are shut out, it becomes difficult, at least, to base the joyful emotions on our "vegetative life." From analogous reasons to the above, there is a growing doubt among physiologists as to how far even muscular reverberations enter into *consciousness*, as in vision; introspection cannot be trusted, there is little need for the return currents to run all the way to the cortex, and these are facts for suspecting that they are chiefly confined to the automatic lower centres.

Altogether, therefore, the James-Lange theory and M. Ribot's main thesis are covered with doubt. Rather than adopt them we may better look upon the brain ganglia as the storehouse of instincts proportionally to their size; and upon the essential ebullitions of emotion as the direct psychic counterpart of the instinctive impulses awakened therein; of the "pre-established neural relations" so fundamentally emphasized by the author. If the emotions are to be based on the instincts primarily at all, then base them here, on their undoubted seat and source of inception, rather than secondarily, *or tertiarily*, on the doubtful "shadows" of the "reverberations" of their "centrifugal results." To do this is far more penetratingly instructive to the biologist, to the psychologist, to the sociologist and moralist, and above all, in so far as this Journal is concerned, to the alienist.

One of the curiosities in this author's general position is his transitional attitude toward pleasure and pain. While his strongest aversion is against the tradition that emotion expresses the total "relational stress" of our ideas, yet he clings to the corresponding physiological doctrine which historically has its origin and sole excuse for existence in that tradition; namely, to the doctrine that agreeableness and disagreeableness express the plus or minus conditions of the body's stock of energy. If, however, the one doctrine is thrown over, the other is sure soon to follow; and very recent discussion (apparently since the author practically finished his writing) indicates that both are now wellnigh gone. If M. Ribot

holds to one leg of the ghost, it but shows how difficult it is to escape "the incurable prejudices" against which he himself inveighs. Perhaps a key to his peculiarity, here, lies in his admitting no fundamental distinction between bodily pain and æsthetic dislike; whereas it is the universal drift of latest psychology to separate the two widely. That is, to use "pain" as a purely *qualitative* term indicating, perhaps, an elementary sense-element, and on a footing with "red" and "sweet." And to look upon agreeableness and disagreeableness (including even that of pain) as an expression of the blind pregnancy of their sensory contents—of their *functional* insistance and associational trend—rather than of any qualitative element to be found in them.

To alienists the book must be of unusual value because of the prominence given to the pathology of the emotions. Each one is separately treated from its morbid side. Conspicuous in all this is the author's emphasis of "infantieism" as opposed to "degeneration"; also the stress he lays upon the individual's constitution and temperament as a whole, and the relation of cœnæsthesic changes thereto.

The breadth and scientific reach of the author are, perhaps, best displayed in his chapters on the social and moral feelings, and the æsthetic, intellectual and religious sentiments. We may not agree, however, that sympathy, as a basis of altruism, is "a highly generalized, original, psychophysical property of all living matter"; or that the "intellectual element," as opposed to the "emotional," is "never alone and by itself the spring of action"; moreover, the "play-instinct," as the fundamental source of art (the theory adopted by this author) has perhaps since Schiller been sadly overworked—rather, we should incline to say, that play is the expressive result of æsthetic feeling. The following quotations may best in themselves indicate how deeply cogent is the book to the most fundamental problems of current social and moral science:

"The family group and the social group have each sprung from different tendencies, from distinct needs; each has its special, independent psychological origin, and there is no possible derivation from one to the other." "The social instinct is not derived from the domestic feelings, while the latter are not derived from the social feelings." Gregarious life, as opposed to domestic, rests on "mutual attraction of similar beings"; on "stature, strength, means of defence, kind and distribution of food, and mode of propagation. Derived from necessity, their habit of life in common creates a solidarity which is not mechanical and external, but psychological." Moral sentiment, at bottom, "is a tendency to act, or not to act." "Tenderness is innate and spontaneous: justice, acquired and deliberate . . . If man is social and moral, it is less because he thinks than because he feels in a certain manner and tends in a certain direction." "The onward march is proportioned to what is *felt*, not to what is understood." Æsthetic development "has progressed from the social form to that of individualism, and from man to nature." The religious feeling "is a complete emotion, with its train of physiological manifestations, and those writers who have classed it among the intellectual feelings have only considered it under its higher forms, and when it is on the point of extinction." "The religious sentiment and the moral sentiment, though having numerous points of contact and moments of fusion, are yet, in their nature, essentially distinct, because answering to two totally distinct tendencies of human nature." "In the beginning religious feeling is not only quite a stranger to morality, but even in conflict with it." "For my own part, I am inclined to accept the priority of feeling [in the origin of religion], though unable to supply any arguments based on facts." "Every religion, great or insignificant, is an organism constituted by a fundamental belief attached to precepts, images, or concepts, *plus* certain secondary notions which are sometimes mutually contradictory, *plus* an emotional state."

On the whole the great value of this book, as we have indicated, lies in its store of current and available information, gathered with remarkable harmony of purpose and penetration of modern scientific needs. Though some of its main theories may be wrong; though it bear suggestion of "card-catalogue" and hasty "lecture-course" origin; though in places it is ragged, confused and perhaps even inconsistent with itself; and though it should be studied inquiringly rather than trustingly; yet it is, nevertheless, a truly great work—the result of a lifetime of laborious inquiry and research by one of the acutest minds of the age. It will remain the standard treatise on its subject for some time to come.

HERBERT NICHOLS.

The Insane Poor in Private Dwellings in Massachusetts. By Sir ARTHUR MITCHELL, K. C. B., M. D., LL. D., Ex-Commissioner in Lunacy for Scotland. Bost. Med. and Surg. Journ., vol. cxxxvii, No. 19.

This paper, by the Scottish apostle of boarding-out, appears in the nick of time. Taking as his text the remarks made upon the subject in the eighteenth annual report of the Massachusetts State Board of Lunacy and Charity, Sir Arthur Mitchell addresses himself, in a tone at once judicious and convincing, to the arguments raised by the board for and against the Scottish system as practised or susceptible of practice in Massachusetts. Boarding-out having had eleven years of half-hearted trial in Massachusetts in this matter of family care of the dependent insane, it is high time to inquire into the causes of what one cannot but regard as an apparent failure. Mr. F. B. Sanborn was the enthusiastic promoter of the movement in 1885. It was therefore well started. It does not appear, however, that his successors in office have ever taken up the work *con amore*. Indeed, there have been at times real enemies of the system in the board. Now, however, the discouraging statistics of the board to the contrary notwithstanding, boarding-out, or at least the principle underlying the system, is gaining everywhere in public opinion, and public opinion being so often the guide to public policy in lunacy matters, one may now look hopefully for a wider application of its benefits to the insane poor in all the more thickly settled portions of our country. Sir Arthur Mitchell's paper will prove of immense help to this end.

Quoting the Massachusetts statistics for the eleven years ending September 30, 1896, there is shown a slow (from 34 to 175) but steady growth of the number boarded-out during the first seven years, but during the last four years an equally steady decline (from 164 to 129) notwithstanding "the same effort to place patients out." Sir Arthur intimates a polite doubt whether in fact "the lack of material alone has prevented the advance of the system," as the report alleges. There must indeed have been other causes of failure. He thinks, and we believe justly, that there has been a misunderstanding of the real purpose of the system. The report concedes significantly that the number of persons who desire to receive boarders exceeds the supply. The defect must therefore be sought in the condi-

tions regulating such supply. In Scotland all that is required is a certificate that the patient is (1) incurable, (2) harmless, and (3) not in need of such special nursing as cannot easily be found out of institutions. Thus is the field widened. It would seem hardly credible that but 129 of such insane poor are to be found in Massachusetts. In discussing the advantages to patients of care in private dwellings, the report mentions "home comforts and pleasures, and measurable return to his former habits of life," and adds that "the flickering remnants of mental activity are stimulated by the presence of old familiar habits, and the patient is happier than in the hospital." This accords exactly with the results of Scottish experience, says Sir Arthur, who makes this irrefutable comment: "If it is true of any single patient that his happiness and enjoyment can be thus increased, the State has no right to deprive him of that blessing, even if it cost a little more instead of a good deal less." And is he not right in querying whether long connection with asylums does not tend to make us bad judges of what patients among the incurable could with advantage live under private care in non-institutional surroundings? It was Bucknill, we remember, who, like one of our own great men still living, insisted that alienists should breathe much of the pure air of rational life, for if we allow ourselves to become ignorant of the outside world we shall make no just comparison of the sane with the insane, and thereby run the risk of considering opinions and conduct morbid which after all are only strange.

A priori it would seem wise to select for guardians, as has been done in Massachusetts, families without young children, and we are not entirely persuaded to the contrary by Sir Arthur's assurance that in Scotland the presence of children is often a decided advantage. The question is one that affects rather the welfare of the children, whose rights in the premises may not be ignored. We confess that his reference to the educational value of the association, in so far as the child is developed along lines of sympathy, impresses us somewhat as a special plea. Light is made of the "difficulty of securing, in case of illness, the same care that can be obtained without the slightest delay in the hospital," by suggesting that patient and guardian are in this respect on an equal plane. And the Scotch critic does not mince matters in discussing and dismissing the risk that persons will "take patients for the sake of gain," for, in Heaven's name, for what other purpose would they take them? There is much mawkish sentimentality in this apprehension. We quite agree that "the motive of gain or advantage is quite a proper motive, and in good administration there is no difficulty in preventing abuses and excessive gains." But Massachusetts may perhaps be excused for an affectation of alarm on this score, in view of the modes of payment for the inmates of almshouses which obtain within her borders—and to which damaging reference is made in the report—things which Sir Arthur finds it difficult to believe, and which, he opines, will soon "be remembered with some shame as well as regret." "In one instance a town actually receives $25.00 from an individual for the privilege of boarding-out one

feeble-minded woman who renders valuable service." No wonder then that self-seeking overseers of the poor hinder the growth of the system of boarding-out if this is their point of view, and prefer to care for their incurable insane in their almshouses. Mechanical restraint and a woful lack of comfort are not uncommon in some of these sorry receptacles. Sir Arthur is sound in insisting that "all the insane poor, *however provided for*, should be as much under the care of the State as those of them who are in asylums." In that dictum we have the whole scheme of prevention in a nutshell.

Many more interesting questions raised by the report are discussed by this experienced and thoughtful critic of the system. Only one more need be alluded to here. Objection is made that boarding-out leads to the removal from asylums of useful and profitable workers. It is refreshing to note the vigor with which the reviewer nails this error as one that ignores the obligation of the State to do for the insane poor what is best for them, regardless of selfish considerations. Moreover, he emphasizes the fact, which American experience surely confirms, that the removal of quiet patients who are good workers and are able to be helpful to themselves and others has not the effect here alleged. "When such patients are removed this is what happens: it is found that there are other patients who can be induced to work. The set of good workers being sufficient in number, no serious effort is made to lead non-workers to become workers. They are not wanted, and a refusal to work is too easily accepted as a thing that cannot be got over. In this way the removal of the incurable and harmless does good to those who are left and tends to increase the number of recoveries."

The Scotchman is not the only "hame body." Like him, the plain people of our own land are ever ready, even when insane, to exchange the pomp and circumstance of the big asylum for the *res angustæ* of their saner and simpler days. Sir Arthur's plea for the system is an eloquent plea for the *man*, in whose yearning, be he Scot or American, for the life to which he was born and reared one may often find the echo of that plaintive song of Burns—

> It's no in titles, nor in rank,
> It's no in wealth, like Lon'on bank,
> To purchase peace and rest;
> It's no in making muckle *mair*—
> It's no in books—it's no in lear
> To make us truly blest.

Notes and Comment

A New Lunacy Proceeding in Pennsylvania.—A patient who will here be known as A. B. C. was transferred from the Western State Hospital at Staunton, Virginia, to the Pennsylvania Hospital for the Insane in 1887. At that time he was thirty-six years of age. He had been received into the Staunton hospital in 1870, and had a parole, or somewhat enlarged leave of absence in 1875, but was returned to the hospital in 1876.

At the time of his admission some history of his insanity was furnished by the person in charge. It was stated to have been, in its earlier stages, of a melancholic type, with suicidal tendencies; that shortly mania developed, following which he had become partially demented. Since the active symptoms of mania passed away he had periods of excitement, during which he had threatened violence and armed himself with clubs.

In 1886 he attempted to obtain his discharge by means of a writ of *habeas corpus*. The discharge was denied, and a copy of the judge's opinion accompanied the patient and was placed on file. Quoting from this opinion and assigning reasons for his conclusions, the judge recalled "Memories of repeated attempts to take his own life, as in Baltimore when he climbed out of the third story window; at home when he plunged down the chimney; at Winchester, when he tried to shoot himself and then broke the pistol because he failed in the attempt. Memories of the scene when he tried to cut out the heart of his own devoted father; of the time, too, when he attempted a felonious assault on a woman near the city; and memory of a similar crime suppressed and darkly hinted at, in the evidence, which could only have been committed by a monster," if sane.

On his admission to the hospital in Philadelphia he was noticed to be pale and anæmic. The eyes were dark and furtively wandering; movements quick; conversation indicating an unstable and changeable organization. During a great portion of his resi-

dence in the hospital he was subject to periods of irritability, at which times he lost self-control, became passionate, and at times his rage was violent. He frequently used profane and threatening language, and on several occasions committed acts of violence by striking and in other ways. The fits of anger were sometimes followed by periods of depression, and he seemed to be more than usually hypochondriacal. At times he tried to carry on correspondence with women who advertise for husbands; offered himself in marriage to designing people, and tried to supply himself with pictures of nude women and erotic literature. He showed a disposition to attach himself to various women, especially to those employed about the hospital, and made them presents. At times he spoke in very slurring terms of his father, and said he hoped "he was in hell." At other times he was somewhat rational in conversation and conduct, and had the liberty of going into the city with an attendant in charge to visit billiard rooms for his diversion.

Prior to his removal from the Western State Hospital, A. B. C. was declared to be a lunatic, and a committee of his person and property was duly appointed by the court.

In July, 1890, he eloped and went to Washington. On leaving the train he was arrested, something in his appearance suggesting to the vigilant officers of that locality a suspicion that he was an undesirable citizen, and he was returned to the hospital three days later. On being returned to the hospital he said the next time he eloped he would purchase a revolver and shoot the first man who touched him. He also said that if he had had a revolver when he was arrested he would have shot the policeman. After his return to the hospital he was repentant, and said he would try to conduct himself properly, but that he was persecuted and needlessly watched. During his absence his bureau and wardrobe were searched, and were found filled with all kinds of rubbish, such as old newspapers, crackers, pieces of clothing, and other articles of no value.

In 1891 he eloped from the hospital, and was returned during the following month. During this absence he seems to have walked through the State of Delaware until he reached Cape Charles, whence he proceeded to Norfolk, where he was arrested as a suspicious person and placed in jail. During this time he

seems to have endured much hardship from privation and exposure, and on his return seemed pleased that he might receive care. He was in an exceedingly repentant state, and begged to be allowed to remain in the hospital.

Soon after his return his committee was requested to arrange for his transfer elsewhere, as he was constantly seeking to escape; did not seem to enjoy the hospital, and it was thought some change would be beneficial. But as he did not desire to leave the hospital, and requested his guardian to intercede in his interest for his further residence, it was arranged that he should remain.

From time to time during his residence, down to the year 1895, he had been in frequent communication with lawyers residing in Philadelphia, and had been visited by a large number—probably ten or twelve, at different times—nearly all of whom had declined to interfere after having an interview with him.

In 1895 he was taken before Judge Hare of the City of Philadelphia, on a writ of *habeas corpus*, but after hearing the testimony the writ was dismissed, and the patient was remanded to the hospital, with the suggestion that he be allowed to travel when a suitable escort could be provided. A. B. C. was very indignant at this decision, and spoke in very bad and profane terms of the judge. He refused to leave the hospital on such conditions, and afterwards expressed a willingness and desire to remain, provided an extra money allowance was given him weekly. Several months later the lawyers who had undertaken his case made application for an order to determine the existence or non-existence of his insanity by an inquisition. This rule was granted, but was reversed by a superior court, and the reversal was afterwards affirmed by the Supreme Court of the State.

For a period of several years prior to 1896, A. B. C. had come to enjoy more and more liberty, which consisted of going out twice during each week to dine, and to go to a hotel to play billiards. In April, 1896, he again eluded the vigilance of his attendant, and attempted a journey to Montgomery, Alabama. Under the impression that this journey should begin in the City of New York, he took a train for that city, where he remained a very few minutes, boarding a return train after he had purchased a ticket from New York to Montgomery, Alabama. His

conduct on the train was such as to attract the attention of the conductor and brakeman. He seemed to be under the correct impression that he was returning by the same route over which he had passed but a few hours previously, and secreted himself in the water-closet of the car in which he was riding. He was several times directed to come out of the closet. Subsequently, after inquiring whether the train entered Broad Street Station in the City of Philadelphia, and being informed that it did, he made a leap from the platform of the car while moving at the rate of twenty-five miles an hour, sustaining a fracture and dislocation of the outer end of the right clavicle; a fracture of one of the bones of the right hand; a severe contusion of the right knee; a laceration of the forehead; and suffering from shock. On his return to the city of Philadelphia he was sent to a general hospital by the authorities, from which he was returned to the hospital for the insane the same evening.

During his treatment for these injuries A. B. C. was quite tractable, co-operated with the physicians in his care, and seemed grateful for everything that was done for his comfort. Since receiving the injury he has not been as quarrelsome as he was before, although he seemed at times restless and dissatisfied, but evidently controlled himself better and got on with less friction.

The Supreme Court of the State having held that no authority existed to determine the sanity of a person by a jury trial in order to supersede a committee, it became necessary, in the judgment of counsel, to cure this defect, and to facilitate the interests of their client by procuring the enactment of the following amendment to the State Lunacy Law:

"Section 63.—It shall be the duty of the court to which any inquisition shall have been returned, or of any court of Common Pleas of the County in which any alleged lunatic or habitual drunkard shall be confined or detained, or be under any restraint whatever as an alleged lunatic or habitual drunkard, on petition of such alleged lunatic or habitual drunkard as the case may be, setting forth that he is restored to a sound state of mind, or is now of a sound state of mind, or that he is reformed and become habitually sober, and that he demands a jury trial, to make such order respecting notice as to the said court may be advisable, and to award an issue, framed to determine the question of fact

involved, wherein the petitioner shall be plaintiff, and the committee of the person and estate of the petitioner, or the party or parties holding the petitioner in confinement or under restraint, or under detention, shall be defendant or defendants; and such trial shall be had according to the course of the Common Law, and the verdict, if in favor of the petitioner, shall be conclusive, and it shall be the duty of the court to enter judgment on the verdict and to make an order setting the petitioner at liberty and restoring to him his property, but if the verdict shall be against the petitioner it shall be advisory only. If, however, the petitioner shall not demand a jury trial, then it shall be the duty of the court to take proofs of the facts, and if satisfied of the truth of the allegations in such petition, to make an order, where an inquisition shall have been returned as aforesaid, that the commission issued in such case, and the inquisition taken thereon and the appointment of committee and all proceedings relating thereto be suspended or altogether superseded and determined as the court shall decide, and the court shall have power in all cases to make an order setting the petitioner at liberty and restoring to him his property, and it shall be the duty of the court in every such trial to direct who shall pay the costs thereof, or to apportion said costs between the parties to the issue as the justice of the case shall require, and to order and direct payment accordingly, provided, that nothing in this Act shall be so construed as taking away the right of appeal as at Common Law."

This amendment seems to have been enacted without any general discussion of its broad bearing, so far as is known, and without the knowledge of any of the parties interested, the Committee of Lunacy, or any hearing by the legislature.

In accordance with the provisions of this amended act, proceeding was commenced by asking the court to grant a rule to determine by jury trial the insanity or sanity of A. B. C., in which proceeding he would appear as the plaintiff, and the physician in charge of the hospital should be the defendant. After two postponements, a day was finally agreed upon for the hearing. On the day previous to the hearing A. B. C. set out with an attendant, as was his custom, to make a visit to the city. After leaving the hospital gate two men approached from different directions, one seizing A. B. C. about the arms, and saying he

was his prisoner, and the other taking the attendant in a different direction. A. B. C. was placed in a carriage and driven rapidly away. Five unknown men seem to have been engaged in the operation, which was accomplished in about thirty seconds.

It was learned subsequently that the patient had safely reached his former quarters in the Western State Hospital. This proceeding might seem to be an abduction, or kidnapping, or an attempt to take possession of the lunatic by parties acting under some kind of authority. No person connected with the hospital was engaged in this "taking off," which was in contravention to the lunacy laws of the State and the orderly and established practice and dignity of the hospital service, and was a manner of discharge hitherto unknown and unauthorized by our lunacy laws.

The patient, A. B. C., it appears, had been admitted to hospitals of two States according to their legal requirements. Twice he had been brought before separate judges in two States, and after each hearing had been remanded to the charge of a hospital. A jury of his own State had decided that he was mentally incapacitated to care for himself and his estate, and a committee had been appointed. When the committee applied to the court of his own State for leave to remove him, for good reasons, to an institution beyond its jurisdiction, permission was granted, but the committee was placed under bonds in the penal sum of ten thousand dollars to return its ward.

The plaintiff, as he was called, did not own any property in Pennsylvania which this act could reach. The legislature of Pennsylvania amended its lunacy law so as to furnish the special relief asked for by this client, and to enable a recent proceeding to be continued in the courts, which permitted an endless repetition. Under the amended act the court can assess the costs upon an estate of the lunatic, while the petitioners incur no costs, risks, or expense.

The insanity of the plaintiff at a previous period was not questioned, but the contention was that he had recovered and was now sane. Heretofore where proceedings to supersede the committee of a lunatic had been left with the judges to determine, now, for the relief of this patient (as was avowed), and other petitioners, a jury verdict must determine the mental state from time to time.

The contention of the present case was not so much for the personal liberty of this plaintiff, as the fact that he should control his estate, and before a court in a State within whose limits not a dollar of it was to be found.

The counsel for the plaintiff in a joint letter to the Mayor of the city represented the "taking off" of the plaintiff as a public outrage, and asked that a suitable reward be offered for the apprehension of the offenders against the peace, the dignity, and the liberty of the people of the commonwealth. It is not known that the police authorities took any notice of the affair beyond an endeavor to ascertain the facts.

The laws of Pennsylvania provide for an orderly manner of discharging patients, as well as for their admission. So far as we are informed, this proceeding is without precedent, and somewhat new, and we must ask ourselves whether the committee of A. B. C., in the performance of his duty as the appointed guardian of his person and estate, was warranted in putting hands upon him wherever he could find him, and restore both to the supervision of the courts of the State of which he was a native, where he had citizenship, and where his estate was to be found? To this question we believe it will not be difficult to arrive at a righteous conclusion.

BOARDING-OUT FOR THE INSANE.—The brand "made in Scotland" goes nowadays. Golf has spread like wildfire over the length and breadth of this continent and Scottish influences are in evidence everywhere. Is it not time to give a fair trial to boarding-out as practised north of the Tweed? The benefits accruing to the insane from this system are a never-failing topic of interest in Scotch blue-books, the thirty-ninth annual report of the lunacy board being no exception. Unabated confidence in the system is again shown, it appearing that the number thus provided for during the year 1896 was 2667 out of 14,500 under official cognizance at its close, that is, over 18 per cent. of the total registration. It was Sir Arthur Mitchell, we believe, who began the agitation over thirty years ago by publishing his *Insane in Private Dwellings*, and the system has spread by leaps and bounds ever since, and has apparently come to stay. The Scotchman is nothing if not shrewd and cautious. There must

be something in it for him as well as for the patient. And there is: for when last year, after a homicide—the first of the kind in thirty-eight years—was committed by a boarding-out patient and a protest went up from a few, it was followed by a loud counter-wail from the parish which had derived benefit from the system. Let it be once tried in America and there is every reason to believe that boarding-out would be received with hearty acclaim as a ready solution of the problem of extra accommodation for the insane. The system is consonant with modern conceptions. Experience has shown that a wider liberty often brings better results than immurement and costs less. Massachusetts adopted a boarding-out scheme under the administration of Mr. F. B. Sanborn which bade fair to succeed. For some reason or other it was not fostered, and Mr. Sanborn's successors have not seen fit to take an active, pushing interest in the work.

One sometimes hears the argument—a fallacious one surely—that there are inherent differences between the Scotch and American farming class that foredoom the experiment to failure. The universal Yankee is not the canny Scot. It reminds one of the old argument that the American is so constituted that he will not tolerate a humiliating manual restraint from his peers, although he may patiently submit to mechanical means of control. It is said we have no needy yeomanry—or if we have it is too proud—willing to eke out its scant livelihood for small hire; no small farmers who combine small means and respectability in such proportions as to make them desirable custodians of the boarded-out insane. These are surely doctrinaire objections. Let the traveler who knows his Scotland declare whether the average Scotch farmer suffers *quoad* respectability and self-respect by comparison with the cis-Atlantic husbandman. Certain it is the average American farmer, unless appearances deceive, needs every encouragement that money and additional labor, where labor is so dear, will bring. No one who has had experience in colonizing the working insane in family groups of fifteen to twenty, away from the mass and removed from close and constant supervision, but will testify to the greater comfort of the colonists. Take the testimony of the patients themselves. It is the simple pastoral life to which they have been reared. These able-bodied men work in the fields and barns and are happy, so far as posi-

tive happiness is susceptible of attainment by the insane. They return to the farm meal, after a season of honest sweating, with appetites well whetted, to be appeased with hot and savory food, which some of them have helped to cook, and which all may see and smell on the range. There is a lack of restraint everywhere; a freedom from those institutional influences that are foreign to the home. The day's work ended, the evening pipe smoked, the newspaper read, the letter written, sleep with these patients must not be wooed to be won, and they are up with the sparrows, refreshed and alert, to begin the simple, healthful tasks of the working day. It is a reflection upon the intelligence, as well as upon the humanity of our people, to assert that good hosts cannot be found for such farmer patients in America if the search be in competent hands. New York, with its extensive system of State care, with State hospitals dotted here and there among farming communities, would lend itself nicely to a thorough trial of this system. A scheme of visitation might easily be established with the willing co-operation of the medical officers. The only objection which can be urged against such a system, always assuming that the selection of patients, as well as of their homes, shall be made a medical matter, is that the hospital may be deprived of some of its best workers. Grant this, but ought not the question to be, not what is best for the hospital, but what is best for the patient? Of course, if unfair advantage should be taken of the system to relieve the hospital of undesirable patients, without special reference to their fitness for the free farm life, it would fall into speedy disrepute and ultimate desuetude. We submit that the system has never been fairly on trial in America, and that to the State that takes the pains to test its value, it holds out promise of great usefulness as a means of providing for a large proportion of able-bodied working patients for whom expensive hospital construction would otherwise be necessary.

THE INSANE IN PRIVATE DWELLINGS.—Apropos to the above, a recent work of Dr. Sutherland, Deputy Commissioner in Lunacy for Scotland, deserves consideration. From this most interesting little monograph it appears that 2700 insane persons, or 23 per cent. of the pauper insane of Scotland, are thus provided for in private dwellings, and that the number is increasing each

year. It is worthy of note that the percentage of the insane thus boarded out varies in the different counties all the way from 51 per cent., the maximum, in Linlithgow, to 7 per cent., the minimum, in Kincardine. In Scotland two classes of patients are provided for in private dwellings—those who have been inmates of asylums and go out to homes with the approval of the superintendent under whose charge they have been, and insane persons of a harmless type who have never required any asylum care. In the first instance the private dwelling is very much of the nature of a convalescent home, and is in reality a form of "after-care" which in many instances is most desirable. It is interesting to note that in not a few cases the families which care for insane persons are their relatives, and the payment for their care is a species of out-door relief. Of the 2700 insane, 800 or 900 are in small village colonies of from 10 to 40 persons. In no case is the proportion of the insane to the sane in a village beyond 5 per cent.

Imbeciles and harmless dements are the types of insanity generally provided for, but, as Dr. Sutherland shrewdly remarks, in placing the patient in the private dwelling the form of insanity is not as much considered as the individual. Those who go into private families must be free from unpleasant peculiarities and faults of temper. There are fifty per cent. more women than men, or about 1600 women to 1100 men. The majority of the patients are placed singly in families very much as at Gheel. There were, for example, only 64 houses licensed to receive four persons; 88 licensed for three; 299 for two; and the remainder, 1582, received but a single patient. The guardians in whose care the insane are placed were in 40 per cent. related, and in 60 per cent. unrelated, to their patients. It is gratifying to note that there was developed a tendency on the part of guardians to individualize the patient, to maintain and develop his personality, and finally, to enlarge his mental horizon. In many cases considerable attachment sprang up between patients and their unrelated guardians, and the relation of householder to patient, if not wholly altruistic, was not a selfish one. The cost of the maintenance of such patients in unrelated families was from six to seven shillings per week; in related families from one shilling and sixpence to five shillings, in addition to the cost of clothing.

Money was formerly paid to the guardians to purchase clothing, but this was not found to be the best way, as there was a tendency to economize at the expense of the patient. The clothing, accommodation, food and convenience are not equal to what is furnished in a modern asylum, but with all its deficiencies, the insane seem to prefer the homely life in the private dwelling to the more hygienic, elegant and orderly asylum.

An annual inspection of these patients is made by a deputy inspector representing a central authority. He may come oftener if he is needed. He reports on the suitableness of the patient for private care, on the mental and physical condition of the patient, his conduct, the character of his accommodations, food and clothing. He also has the power to make any changes necessary, either by removal to another family or by return to an asylum. In addition to this central inspection, four annual visits are made by a local medical officer and two by an inspector of the poor.

It is estimated that to provide asylum accommodation for the 2700 patients who are thus cared for would require an immediate outlay of about £1,000,000 or $5,000,000. If the interest upon this outlay be added to the increased cost of maintaining patients in asylums as compared with private dwellings, the actual saving to the rate-payers of Scotland by this system may be readily seen. Dr. Sutherland calculates that over 2,000,000 pounds sterling have been saved in buildings during the forty years covered by this system and 1,000,000 pounds in maintenance—an aggregate of $15,000,000! While in Scotland 23 per cent. of the insane are boarded out, in England there are but 6 per cent., in Wales 19 per cent., and in Ireland none.

Dotards in Hospitals for the Insane.—Physiological senility, if there be such a thing, and the insanity of old age merge and overlap in such a way in actual practice as often to make the differential diagnosis a matter of the nicest distinction. The brain condition is essentially one and the same in either case, the amount of departure from the normal being determined by, and proportionate to, the degree of degeneration. We all recognize the skilful picture of Otway, as true to life to-day as when drawn over two hundred years ago:

" . . . a wrinkled hag, with age grown double,
Picking dry sticks, and mumbling to herself.
Her eyes with scalding rheum were gall'd and red;
Cold palsy shook her head; her hands seem'd wither'd;
And on her crooked shoulders had she wrapt
The tatter'd remnant of an old striped hanging,
Which served to keep her carcase from the cold."

A greater object of compassion, or a worthier one of charity in the case of the indigent poor it were difficult to find anywhere. Of such frail and disintegrating stuff were witches made in the olden days of superstition. In the more enlightened and humanitarian present, reaction expresses itself in the asylum afforded these forlorn creatures in hospitals for the insane. But it may well be asked if the time has not come when greater restrictions should be placed upon the admission of such cases to our hospitals. Before the insane came to be regarded as the wards of the State, such cases, where there was no special demand for custodial appurtenances in caring for them, drifted naturally into almshouses, and if their friends were not always content, there was little open dissatisfaction with that disposition. To-day, in States that throw wide open their doors to all sorts and conditions of mad folk, one notices a tendency to abuse bounteous hospitality by making the State do work that the county or town did well enough in providing shelter for these victims of decay. In New York, for instance, this shifting of burden has given rise to differences of opinion between the committing physicians and the medical superintendent. Naturally enough the county or town to which the patient is chargeable is not averse from such commitment, and the friends likewise prefer to accept alms of the State. Fortunately the Insanity Law of 1896 clothes the superintendent with authority to determine whether or not a patient is insane "within the meaning of the statute"—a singularly felicitous phrase, by the way, from the point of view of an objector—and to accept or reject, according to his own interpretation of the law. In a test case, in the matter of the application for the commitment of Kate McEligott, an alleged insane person, which was an application to punish Dr. E. C. Dent, the medical superintendent, and Dr. A. E. Macdonald, the general superintendent, of the Manhattan State Hospital for contempt of court for wilfully disobeying the order

made by Mr. Justice Pryor, on the 19th day of February, 1897, in and by which it was adjudged "that Kate McEligott is insane, and that she be committed to the Manhattan State Hospital, an institution for the custody and treatment of the insane," Justice Lawrence, at a special session of the Supreme Court, held in April, 1897, decided as follows:

"The case rests, in my opinion, entirely upon the construction to be given to section 62 of the Act of 1896, and as that section, as already stated, vests in the superintendent the power, if in his judgment the person committed is not insane, to refuse to receive him in the hospital, it necessarily results that this motion must be denied." In the absence of special institutions for the care of this helpless class of dependents, it seems but reasonable that localities should be expected to carry cheerfully their own legitimate burdens when those of the State, as regards the dependent insane properly so-called, are assumed and borne with unmurmuring readiness. Meanwhile the way is open everywhere for individual philanthropy to devise ways and means of comfort and cheer for the hapless dotard in his shambling infirmity till he totters mercifully to his final fall.

STAFF MEETINGS IN HOSPITALS FOR THE INSANE.—At the last meeting of the Association of Assistant Physicians a thoroughly practical paper with the above title was presented by Dr. Irwin H. Neff, of the Eastern Michigan Asylum, at Pontiac, full of helpful suggestions for those medical officers who are interested in the development of better clinical methods in institutions for the insane. The paper is most timely and deserves careful attention. Dr. Neff says:

"Staff meetings in asylums for the insane are not particularly new. In order to get a consensus of opinion, and to bring the subject more prominently forward, a brief review of it is given, together with reports of some of the methods now in use in the different institutions. In the AMERICAN JOURNAL OF INSANITY, issue of January, 1892, two articles pertaining to meetings of asylum physicians are given. Both of these are admirable in their scope, but it seems to me that they do not include the essentials of a staff meeting. These deficiencies exist only when applied to systematic use in asylums.

'The Seminary Method in Asylum and Hospital Work,' by Edward Cowles, and 'Journal Clubs,' by Henry M. Hurd, are expositions of clubs among asylum physicians and advocate the meetings, enumerating their many advantages. The Seminary Method is comparatively new in this country. For a description of it and for an account of its practical workings, reference is made to the article by Dr. Cowles, mentioned above. The advantages mentioned by the author are: 1st, The aim of the society to be original, thus necessitating research into literature; 2d, its co-operative effects, thus insuring mutual benefit. Two distinct lines of work are laid down. 1st, the preparation of a large subject which shall teach the student to speedily get and group many materials in a limited time; 2d, the preparation of carefully wrought theses on smaller topics, where the object shall be the most perfect work, based on a knowledge of the whole literature. The subjects more especially relating to neurological and mental science are first considered, then special subjects are chosen. As bearing upon any topic minor points can be assigned, thus permitting a contribution from more than one member of the staff. An essential part of such a 'Seminary Method' is a compulsory record of each meeting and a system of meetings.

The object of the 'Journal Club' is the abstraction and presentation of the contents of journals, which may be assigned in two ways. 1st, the assignment of a journal or journals to each member; 2d, the allotment of different subjects to the members of the club. The former method is more general, the latter method requires more individual research. A third method mentioned is to assign articles to different members of the club, and permitting a free discussion of the same. These systems, with modifications, are the basis of journal clubs.

Both of these methods have advocates. Unquestionably the formation of clubs of this sort is beneficial. In schools, universities, and general hospitals, they have been of incalculable benefit. Their success in asylum staffs would seem assured. The varied duties of an asylum physician might seem to negative such an organization. This is particularly so in many State asylums.

It has, however, been demonstrated that staff meetings are

not only practicable, but in institutions where they have been established, have become permanent. No other recommendation is needed, as it is well known that many remedies and reforms are experimented with in asylums for the insane, many of which have fallen by the wayside. It may confidently be said that in asylums where staff meetings have been instituted there is a universal expression of approval. The advantages of such meetings are apparent, and the enumeration of these seems to be unnecessary. Suffice to say, that in order to make them successful a system is necessary. For securing this, rules and regulations are demanded; in other respects parliamentary tactics and formality may be dispensed with.

In conducting the staff meetings, which I shall presently describe, three essential principles (such they have proved to be) have been considered, and experience has verified their utility. I quote them from one of the above-mentioned papers: "first, the work must be obligatory; second, a definite plan should be selected; third, the work should be thoroughly supervised." Too much stress cannot be laid upon these suggestions, as upon their adoption depends the success of the meetings.

I have personal knowledge of only a few asylums holding staff meetings and conforming to this plan. The feasibility of the meetings, however, has attracted asylum physicians. Discouragements and failures can always be attributed to a lack of system and co-operation.

It is the custom in some asylums to have daily meetings of the staff, principally for the study and planning of administrative work. It is evident that such meetings of a business character conflict with staff meetings such as I have above described.

The point I wish to emphasize is the possibility of conducting such meetings in asylums. The advantages which result can only be appreciated after a trial. The apparent impossibilities can be easily overcome without detracting from the duties of any member of the staff. To be sure, an extra amount of labor is required, but this can be so equalized that the increased duties will not prove detrimental. I can conscientiously compare staff meetings in asylums to training schools in institutions for the insane. Both are necessities, and both are advantageous.

During June, 1895, a staff meeting was organized at the

Eastern Michigan Asylum. The meetings at first consisted solely of the presentation and analysis of cases. Later journal abstracts were given, with an occasional original paper, or a consideration of a special form of mental or nervous disease. At present the meetings are conducted along these lines, having a three-fold purpose, namely, a presentation of cases, the abstracting of journals, and the reading of papers, and discussion upon some special topic. Meetings are held daily, with few exceptions, during the fall and winter seasons; during the summer season every other day is omitted. The time for convening is 11:30 to 12:15 A. M., this being the more convenient time and freer from interruptions. The time in asylums may necessarily differ, but by holding the meetings daily during business hours they are established as a part of the routine work. The secretary records the minutes of the meetings. When cases are presented an abstract and analysis are given, together with the causation, duration, and provisional diagnosis. Two days during the week are assigned to journals. Exclusive of this, other days are sometimes given to journal abstracts, at times when clinical material is wanting. The matter of presentation of cases is subject to little variation. The physician having charge of the patient gives all facts pertaining to the case; his examination, both physical and psychical, and all notes in relation to the same. The patient is then examined by the different members of the staff, and an opinion declared. This examination is then abstracted by the secretary and recorded. At the conclusion of each report is placed the causation, duration and diagnosis of the mental trouble. The resulting benefits can be inferred. It enables each member of the staff to see and examine each new case, thus securing a more accurate diagnosis, and by securing a written account it simplifies the keeping of case records.

The days assigned to journal abstracts are devoted exclusively to this. Each member of the staff is assigned generally two journals, and two members abstract at each meeting, the time allotted to each report being limited. If a quarterly or a monthly publication is abstracted, an entire meeting is devoted to the abstract, or it may be continued to some succeeding journal day.

The 'overflow days,' days when no clinical material is available, or when journals have not been assigned, are devoted to

some special topic in connection with medicine, or the reading of some original paper. Occasional autopsies have been opportune. No difficulty is experienced in getting material for the meetings. If recent cases are not available, chronic cases, or cases with questionable diagnosis or interesting symptoms can be considered.

The advantages and fitness of meetings of this nature in asylums are readily seen. They offer sufficient variability to sustain interest, and give to each member of the staff individual work, mainly on clinical lines.

Time does not permit me to deal with the minor points of these meetings. These can be satisfactorily arranged with but little trouble. They may necessarily differ in secondary features, but the details can be easily arranged. Although the 'mental analysis' is recorded in the case history under the appropriate faculties, the examination in the meeting is simplified by the adoption of a scheme. The method described by Dana in the Post-Graduate, July, 1896, has proved of service, and although it may appear somewhat crude, and likewise deficient, it is quite practicable, and will be found to be of considerable assistance. For convenience I give the synopsis as it is published:

I. *Expression.*—Attitude, dress, speech, writing, stigmata of degeneration.

II. *Sensation and Perception.*—Ask if the patient has pains, headaches, a good appetite, if disturbed in sleep, if he hears voices of people annoying him, if he sees any one in his room, or is troubled by people calling on him, persecuting him. Test his sight and hearing and skin sensations, his sense of taste and smell.

III. *Knowledge and Ideation.*—Ask what his business is, if he has had trouble about conducting it; ask about his family relations, his home, relatives, his political, business or professional knowledge. Find out if he has any special habits, such as drinking and smoking, his religious ideas; touch on hypnotism, electricity, any current fad of the day—the bicycles or the X-rays.

Hunt for delusions, having first found from friends if he has any, and their nature.

IV. *Emotion and Instinctive Feelings.*—Inquire as to his general feelings, whether of content or unhappiness. Inquire about his ideas on suicide, about his sexual habits, about fixed and morbid ideas, about his family, and his relations or children, in order to see if he has still paternal or filial or conjugal feelings.

V. *Volition and Attention.*—This will be tested in learning his history

and observing his attitude, and making him try to understand a problem one gives or a story that is told him.

VI. *Memory and Association of Ideas.*—This is already in part determined. Ask him about the facts about his life, his name, age, the day of the month, and about his early life, school days, etc., and then about what he did the day before. Test his power of association by making him give an account of some familiar event or object, or by making him do a sum in arithmetic.

VII. *The Consciousness.*—This must be determined by his past history, and observations of his state while under examination. Inquire particularly for morbid somnolence, insomnia, epileptic and automatic states.

From the secretary's report, which has been kept for the past year and a half, I obtain the following data: Number of cases presented, 206; number of journals abstracted, 155; number of autopsies held, 12; number of original papers, 13."

DEATH OF DR. LUYS OF FRANCE.—Dr. Luys died suddenly upon the 21st of August of the present year at Divonne-les-Bains, where he was spending the summer.

Jules Bernard Luys was born in 1828 in Paris, where he received his classical and medical education. He became a hospital interne in 1853 and received his Doctor's degree in 1857. In 1862 he secured a hospital appointment when hardly 34 years of age. At this comparatively early period he had made valuable contributions to the pathological anatomy of locomotor ataxia and of progressive muscular atrophy. In 1864, at the death of Marcé, he succeeded to the Esquirol asylum, an institution for insane of the private class at Ivry-sur-Seine, and from this date he became intensely interested in the study of mental disorders. As the first result of this interest he published in 1865 a work entitled *Recherches sur le système nerveux cérébro-spinal, sa structure, ses fonctions et ses maladies,* which was destined to give a fresh and lasting impetus to the study of the nervous system in France.

In 1881 he published his *Traité clinique et pratique des maladies mentales.* In the same year he founded, in connection with Professor Ball, *L'Encéphale,* which was published for eight years and contained many interesting papers from his pen.

During the last years of his life his energies were largely devoted to the study of hypnotism, and he lost prestige with

scientific men in consequence of the deceptions which were practiced upon him by designing persons. There is no reason, however, to think that he was a party to these attempts to deceive the public, and he must rather be regarded an innocent victim of his own enthusiasm. He was an industrious worker and a keen observer.

DEATH OF DR. JAMES C. HOWDEN, OF SCOTLAND.—*The Edinburgh Medical Journal* announces the death, on August 17th last, of Dr. Howden, Medical Superintendent of the Royal Asylum, Sunnyside, Montrose, Scotland. Dr. Howden was born at Musselburgh in 1830, and after receiving his elementary education, spent five years at the University of Edinburgh, where he received his degree in medicine. He spent a year in medical study in Paris, and in 1853 was appointed an assistant in the Royal Edinburgh Asylum, under Dr. Skae. He was chosen superintendent of the Montrose Royal Asylum in 1857, and filled this post until failing health compelled his withdrawal a few months before his death.

The reports of the Montrose Asylum and his other contributions to the literature of his specialty indicate an active and sympathetic administration. His papers, which were frequently published in the *Journal of Mental Science*, revealed a tendency to clinical, therapeutical, and pathological investigation, and his interest in *post-mortem* revelations resulted in the publication of an ingenious scheme for the complete and convenient recording of autopsies, called an "Index Pathologicus." Dr. Howden is included by the *Journal of Mental Science* "among the first to investigate the lesions in the morbid brain," and the same journal, in 1889, said of him that his "experience has been so great, and his sagacity is so generally acknowledged, that his views on all matters relating to the treatment of mental disease must command respect."

BRANCHES OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION.—The American Medico-Psychological Association appears not only to have fallen heir to the vigor of the old association of superintendents, but, with its new name, to have taken new force and increased ambition. As the oldest national medical associa-

tion it has, with singular and becoming modesty, maintained an existence wholly independent of any other organization, and has possibly hidden its light to an extent which is to be deprecated. With its reorganization and new name, the time appears to have arrived when it may properly increase its sphere of work and the bounds of its influence.

If the English Medico-Psychological Association, with the limited area from which its members are drawn, finds divisional meetings in addition to the regular annual meetings of the Association of value, why should not the American association, drawing as it does its members from a much wider area, find such meetings worthy of trial? The nucleus of divisional associations already exists if the members of organizations who are, or should be, connected with the Medico-Psychological Association will consent to become component parts of the parent organization. We refer particularly to the Southern Association of Superintendents and to the Association of Assistant Physicians. Neither of these associations appears very vigorous as an independent organization, but each might be the rallying-point for an active and useful division of the larger association.

We are not so much a national association as an American one, embracing in our organization not only the members from the United States, but the British American provinces likewise, and we might, we presume, include our neighbors on the south, especially in Mexico, where there is a growing interest in the care of the insane. Out of such an association, large in numbers and in the area which it covers, can there not be established divisional sections, meeting quarterly or semi-annually, in a measure independent and in a measure responsible to the parent organization, independent in officers, in programme, in time and place of meeting, but limited in active membership to members of the general association and branches of that body?

A northern division could be formed embracing Canada, an eastern, middle, western, northwestern, southwestern and southern, and at the various meetings of these divisions ample opportunity could be given for the attendance and active participation of those who cannot always attend the annual meetings.

Then, too, these meetings should embrace all branches of the medical service of institutions. As the organization of superin-

tendents alone lacked much which the broader lines of the Medico-Psychological Association, with its active and associate memberships open to assistants, has given us, an organization of assistants working alone equally lacks something which can only be supplied in these divisional meetings.

We trust these suggestions will be considered by our readers and that we may be favored with brief notes for publication upon the points which have been indicated and upon the feasibility of organizing divisional meetings.

GYNÆCOLOGY AND INSANITY.—The report, which we present in this number, of the proceedings of the Psychological Section of the British Medical Association, at its sixty-fifth annual meeting held in Montreal, is unfortunately defective because of the impossibility of obtaining a complete report of the discussions of the papers. As will be observed, much interest centered around the question of the relation of diseases of the pelvic organs to insanity and the necessity or wisdom of operative interference in diseases of the pelvic viscera in insane women.

The papers of Drs. Rohé and Hobbs in favor of the theory of the etiological relation of the pelvic diseases to insanity, and of Dr. Russell, which took the opposite view, occupied in their reading and discussion all of the first day's session after the delivery of the chairman's address, and the discussion was continued the following day, and was again opened by a paper read by Dr. Daniel Clark, of Toronto, on the Reflexes in Psychiatry.

The discussion of this vexed question was unfortunately not carried on in a very logical or convincing manner by either side. Dr. Rohé's paper presented the results of personal observations, as did also that of Dr. Hobbs, and each of these gentlemen either directly, or by inference, drew the conclusion that because several of the patients upon whom operations had been made had improved or recovered, the conditions for which the operative interference was made were the causes in these several cases, or in a large proportion of them, of the insanity. It is not always safe by any means to cry *post hoc ergo propter hoc*, and in no line of human experience is this more unsafe than in medicine, but we cannot concede that the papers of either Dr. Russell or Dr. Clark,

though they contained much which the over-enthusiastic asylum gynæcologist may well carefully consider, presented any proofs which, to the calm medical logician, were any more convincing than those presented by the first papers.

The weight of opinion was manifestly against the stand taken by Dr. Rohé and to some extent supported by Dr. Hobbs, but it appeared to be admitted by all who took part in the discussion that pelvic disease, which in a sane woman would require operative interference, should receive, *pari passu*, the same treatment in an insane woman.

Some of those who opposed the views of Drs. Rohé and Hobbs asserted that special nursing and individualizing the case, as necessitated by an operation, explained the good results which were reported. These gentlemen have, unconsciously perhaps, put a weapon in the hands of the advocates of active gynæcological treatment of the insane. They can now, it seems to us, very well demand of them the presentation of a series of cases recovered or materially improved under special nursing and individualized attention.

We have spoken of the assertions and claims of the gynæcologists. Drs. Rohé and Hobbs were listened to with a respectful attention which is not always, perhaps, accorded to some who have written or spoken upon their side of the question. This was because their auditors recognized that they were reporting the results of carefully collated experience, and were able to speak from the standpoint of men who had an extended and intimate association with insanity. This unfortunately has not always been true of some who have written on the subject, as it is likewise unfortunately true that many who take an opposite stand are unable, from any practical knowledge of the subject, to discuss the factors of pelvic disease. This has often been asserted by gynæcologists, but they appear to have either forgotten their own ignorance of insanity, or have assumed with a calm indifference, which we have seen occasionally in other members of the profession, that any one is able to judge of the problems of psychiatry. The whole question is yet to be solved. We predict that the less radical tone which is already beginning to be manifest in the claims and operative measures of our best gynæcologists on the one hand, and the broader and more earnest medical

spirit which has been steadily for years growing in our asylum work, will in time bring us to a common plane of understanding and agreement. Before that time comes, however, each side in the controversy will have learned much of the intricate problems of physiology, and we shall hear less of reflex irritations and of the hysterical manifestations and mimicry of disease. We shall then, through the labors of the clinician, the physiologist and the physiological chemist, have a working knowledge of the relation and interdependence of the various organs and tissues of the body, and more clearly than now recognize that no organ can say to any other, "I have no need of thee." Nor, when that day dawns, will any special practitioner be willing to say to any other, "I have no need of thee."

Medico-Legal Notes

By H. E. ALLISON, M. D.,

Medical Superintendent of Matteawan State Hospital.

EXPERT TESTIMONY.—According to a press despatch, the Supreme Court of the State of Illinois has rendered a decision which will be of interest not only to physicians but to all professional men.

SPRINGFIELD, ILL., Nov. 2.—A decision has just been rendered by the Supreme Court in the case of the People against Dixon, an agreed case carried up from the Circuit Court of Sangamon County. Dr. J. N. Dixon of this city, who was called as an expert witness in a personal injury case against the city of Springfield, refused to testify unless he was paid a reasonable fee for his service, claiming that his professional opinion was his own property and could not be taken away from him except by due process of law, as provided in the State constitution. Judge Creighton ruled against him and fined him for contempt of court. The court held that this professional knowledge was not property within the meaning of the constitution, and that in the exercise of the right of the court to summon witnesses and compel them to testify no distinction could be made between kinds of knowledge. To make such a distinction would defeat the ends of justice. The finding of Judge Creighton is upheld by the Supreme Court.

Many medical men have had the unpleasant experience of being compelled to attend trials in obedience to subpœnas issued by the court, and then being called to testify without remuneration sufficient even to pay their traveling expenses. We have in mind several such instances in the State of New York, in which the physician had absolutely no knowledge whatever of the facts relating to the commission of the crime, and was summoned by the court to simply testify for the defendant, who several years before had been under his treatment. Having sworn to the fact of the previous insanity of the defendant, a professional opinion was then asked in each instance by the prosecution, not only as to the defendant's past mental disease, but also as to his condition

at the time of the criminal act and at the time of his trial. The court refused in each case to allow a fee even sufficient to refund actual disbursements.

This brings up the whole subject of expert testimony and the general dissatisfaction with which it is regarded. Any professional man whose opinion is of sufficient worth to be sought, ought to receive a reasonable compensation for his services. His special knowledge has been gained by the expenditure of much time and money, and should possess some value. He ought not to be compelled to relinquish his work, to forfeit several days' income, to incur the expense of travel and of maintenance at a hotel during the trial, without adequate pay, nor should he on the other hand appear as a partisan advocate retained by a large fee to act the part of an assistant to the public prosecutor, nor ally himself with the defense as an expert counselor.

Dr. Austin Flint, as Chairman of the Section of Criminology at the last annual meeting of the Prison Association of the State of New York, expressed the sense of the medical profession in advocating the establishment of boards of experts on technical subjects, to be paid by the county or by the State, which should act in an advisory capacity to the court.

The State Medical Society has endeavored to have a bill enacted providing for the appointment by the courts of experts whose function should be advisory, and who should adequately represent to the court their conclusions drawn from an impartial examination of both sides of the question at issue; the compensation for such services to be fixed at a reasonable rate by the court.

At the last annual convention of the Medical Association of Central New York the employment of experts by either side of a case was condemned, and remedial legislation was advised providing for a commission of experts to be appointed by the State or by the court, at a fixed compensation. Opinions were read from many justices of the Supreme Court of the State. All admitted the necessity of expert testimony, but agreed that the present system of obtaining it made it worse than useless.

A change in the statutes was favored which should require all medical testimony in a medico-legal case to be given by a commission appointed to examine all such matters brought be-

fore the jury at the trial. The plan provides that the medical experts in a case shall be appointed by the court, as referees are, and be paid by the county, without being allowed to receive fees from either the defense or the prosecution. This procedure should be broadened enough to include a similar method of appointing experts in all branches of scientific work wherein special professional skill is required.

MAY A LUNATIC BE SUED?—A case has recently been brought before the Court of Appeals of the State of New York which is of interest to an alienist. The question to determine was whether or not a lunatic may properly be made a party to an action at law. The case was that of Kent vs. West. The West brothers, three in number, were merchants and became badly involved, it is said through speculations in real estate, and employed Kent as their counsel. The agreement made, according to Kent, was that the attorney should save a certain amount—$90,000—for the estate, and that he should receive as his fee all collected by him in excess of the sum stipulated. He succeeded, it is alleged, in saving about $110,000, but when he demanded his reward of $20,000 the brothers repudiated the contract. Previously one of the brothers had been pronounced a lunatic, and a committee had been appointed. After Kent brought action, an action was brought against him for contempt in suing a lunatic, to which he replied that he had a court order allowing him to sue. The court is to decide whether or not it is proper to sue both the lunatic and the committee, or only the committee.

STRICT COMPLIANCE WITH THE LAW IN THE COMMITMENT OF THE INSANE. THE CASE OF LEVI P.—This case is related to show the necessity which exists for the exercise of great care in the commitment of the insane. Precautions should be taken to comply strictly with the letter and spirit of the law, not only in civil but also in criminal cases. The imbecile son of a farmer was arrested upon a charge of aggravated assault, and, while awaiting examination, appeared to be insane. The law of New York in such cases prescribes that the county judge of the county where the person is confined shall institute a careful investigation, call two respectable physicians and other credible witnesses,

invite the District Attorney to aid in such examination, and, if it be satisfactorily proved that he is insane, such judge may order his removal to a State asylum, where he shall remain until restored to his right mind. It is further provided that the State Commission in Lunacy may, by an order in writing, transfer any insane inmate of a State hospital committed thereto upon an order of a *court* of criminal jurisdiction, to the Matteawan State Hospital. The prisoner upon examination was found to be insane and committed to Rochester State Hospital upon an order of the special county judge of Monroe County. The examination was held in accordance with the statute so far as to notify the District Attorney to be present and to aid, and two competent physicians were appointed who pronounced him insane. No other credible witness seems to have appeared at the hearing. Soon after his admission to Rochester he was transferred by the State Commission in Lunacy to the Matteawan State Hospital.

Upon a writ of habeas corpus for his discharge from custody, it was subsequently argued that in the first instance the commitment to Rochester was illegal for the reason that no *other* credible witnesses were examined at the proceedings instituted by the special county judge, and furthermore the order for the original commitment to Rochester having been signed at chambers did not constitute an order of *a court*, consequently his transfer to the Matteawan State Hospital was also illegal. The justice of the Supreme Court so held, and the patient was discharged from custody. As the man, however, was a lunatic, large and powerfully built and said to be a dangerous person to be at large, a chaser of women and children, sexually perverted, and a terror to the community, he was held for further examination. Upon a second certificate of insanity he was finally recommitted to the Rochester State Hospital as a civil case, the criminal charge having fallen, as the principal witness in the complaint had left the State. The case simply shows how easy it may be for a dangerous insane criminal to evade the provisions of the law for his safekeeping, unless the statute is most carefully and technically observed even to its smallest details.

A Quarterly Bibliography of Psychological Literature

(Extracted, by permission, from the Index Medicus.)

Alessi (U.) La coprostasi negli alienati di mente. Gazz. d. osp., Milano, 1897, xviii, 385.

Alexander (H. C. B.). Epilepsy and neurasthenia in their relations to auto-intoxication. J. Am. M. Ass., Chicago, 1897, xxviii, 743.

Alexander (Harriet C. B.). Psychosis of old age. Alienist & Neurol., St. Louis, 1897, xviii, 180-202.

Andriezen (W. L.). The pathogenesis of epileptic idiocy and epileptic imbecility. Brit. M. J., Lond., 1897, i, 1081-1083.

Bateman (Sir F.). On intemperance, consanguine marriages and educational over-pressure, as factors in the genesis of nerve disease and degeneration of the race. Alienist & Neurol., St. Louis, xviii, 122-131.

Belmondo (E.). Metodi e tendenze della moderna psichiatria. Clin. mod., Pisa, 1897, iii, 101-106.

Berillon (E.). La capacité civile des morphinomanies; la morphimanie entraine-t-elle l'incapacité de tester? Rev. de méd. lég., Par., 1897, iv, 103-108.

Berkley (H. J.). Mania errabunda (alcoholic dual consciousness). Am. J. Insan., Chicago, 1897, liii, 489-509.

Berkley (H. J.). The intra-cortical end-apparatus of the nerve fibres. Proc. Am. Med.-Psychol. Ass., Utica, 1896, 134-138, 1 pl.

Biaute. De la responsabilité au point de vue mental. Echo méd., Toulouse, 1897, 2 s., xi, 80; 89; 101; 114; 130; 138; 152; 232; 246.

Bissell (Helen W.). Insane and criminal women. Northwest Lancet, St. Paul, 1897, xvii, 211.

Bleile (A. M.). The urine in epilepsy. N. York M. J., 1897, lxv, 621-625.

Bombarda (M.). La folie pénitentiaire. Rev. portugueza de med. e cirurg. prat., Lisb., 1896-7, i, pt. 2, 33-40.

Bond (C. H.). Further points in the relation of diabetes, including glycosuria, to insanity. J. Ment. Sc., Lond., 1897, xliii, 291-313.

Bordoni (L.). Sull' epilessia emicranica. Policlin., Roma, 1897, iv-M., 125-134.

Bourneville. Construction d'un pavillon d'agitées à l'asile de Villejuif. Arch. de neurol., Par., 1897, 2. s., iii, 412-417.

Bramwell (B.). On aphasia and will-making. Brit. M. J., Lond., 1897, i, 1205-1210.

Brickner (W. M.). A clinical report of three cases of uncommon nervous affections occurring among the insane. State Hosp. Bull., Utica, 1897, ii, 19-31, 1 pl.

Brosius (C. M.). Zur Wärterfrage. Irrenfreund, Heilbr., 1896, xxxviii, 81; 97; 129.

Brush (E. N.). The condition of the dependent insane in Maryland and suggestions concerning their better care. Maryland M. J., Balt., 1897-8, xxxvii, 147-151.

Bucke (R. M.). Gynecological notes. Proc. Am. Med.-Psychol. Ass., Utica, 1896, 139-160.

Bullington (S. D.). Passion flower (passiflora incarnata) in epilepsy and other neuroses. Nashville J. M. & S., 1897, lxxxi, 107-109.

Burr (C. B.). Morbid besetments or obsessions. Physician & Surg., Detroit & Ann Arbor, 1897, xix, 159-164. [Discussion], 171-174.

Campbell (H.). Should epileptics marry? Lancet, Lond., 1897, i, 914.

Cestan (R.). Aphasie sensorielle. Bull. Soc. anat. de Par., 1897, lxxii, 124-126.

Channing (W.). The palate of idiots. [Abstr.] Proc. Am. Med.-Psychol. Ass., Utica, 1896.

Clark (A. Campbell). Clinical manual of mental diseases; for practitioners and students. Lond., 1897, Baillière, Tindall & Cox. 477 p. 7 pl. 7 charts. 8°.

Clark (L. P.). Headache in epilepsy. N. York M. J., 1897, lxv, 831.

Claus (A.). Aphasie. Med. Weekbl., Amst., 1897-8, iv, 123-125.

Claxton (G. E.). Two cases of hystero-epilepsy in the male; a novel method of cure. Indian M. Rec., Calcutta, 1897, xii, 325.

Collins (J.). The treatment of epilepsy. Post-Graduate, N. Y., 1897, xii, 125-147. [Discussion], 158-163.

Collins (J.). The treatment of epilepsy. Yale M. J., N. Haven, 1896-7, iii, 219-226.

Colucci (C.). Contribuzioni alla istologia patologica della cellula nervosa in alcune malattie mentali. Atti d. r. Accad. med.-chir. di Napoli, 1897, n. s., li, 10-39. Also: Ann. di nevrol., Napoli, 1897, xv, 12; 103.

Combemale (F.). Les indications et les contre-indications du traitement de l'alcoolisme chronique par la strychnine. Gaz. hebd. de méd., Par., 1897, n. s., ii, 457-459.

Cooper (W. G.). Report of one hundred autopsies. State Hosp. Bull., Utica, 1897, ii, 83-143.

Cristiani (A.). Le fine alterazioni del cervelletto in relazione a quelle del cervello (lobi prefrontali e centri motori corticali) negli alienati di mente. Ann. di nevrol., Napoli, 1897, xv, 47-61, 1 pl.

Crothers (T. D.). The medical treatment of inebriety. Tr. N. York M. Ass., 1896, xiii, 219-227.

Cullerre (A.). Une forme de délire systématisé des persécuteurs; le délire de revindication. Ann. méd.-psychol., Par., 1897, 8. s., v, 353-368.

Dalzini (A.). Sulla tossicità del succo gastrico dei pellagrosi alienati. Riv. sper. di freniat., Reggio-Emilia, 1896, xxii, 858-861.

Davenport (Isabel M.). Five cases of hysterectomy in the insane. Am. J. Insan., Chicago, 1897, liii, 513-520.

De Boeck. L'épidémie de folie à Bruxelles. Soc. roy. d. sc. méd. et nat. de Brux. Bull., 1897, lv, 49-54.

Dercum (F. X.). The drug habits. Syst. Pract. Therap. (Hare), Phila., 1897, iv, 795-817.

De Sanctis (S.) e Maria Montessori. Sulle considdette allucinazioni antagonistiche. Policlin., Roma., 1897, iv-M., 68; 71; 113.

Desplats. Variétés cliniques de l'aphasie; automatisme psychologique. J. d. sc. méd. de Lille, 1897, i, 433-445.

Dewey (R.). Our association and our associates. Some relations affecting medical officers of hospitals for the insane. Proc. Am. Med.-Psychol. Ass., Utica, 1896, 65-86.

Didier. Kleptomanie und Hypnotherapie. Halle a S., 1896. 12°.

Elder (William). Aphasia and the cerebral speech mechanism. Lond., 1897, H. K. Lewis. 271 p. 8°.

Elliott (R. M.). The insanity of two sisters. State Hosp. Bull., N. Y., 1897, ii, 32-34.

Emminghaus. Ueber die Behandlung des Irreseins im Beginn und über die Indicationen der Irrenanstaltsaufnahme. München. Med. Wochnschr., 1897, xliv, 346.

Eshner (A. A.). Traumatic hysteria. Med. & Surg. Reporter, Phila., 1897, lxxvi, 773-776.

Eyman (H. C.). Simulated psychoses with reference to diagnosis. Cleveland M. Gaz., 1896-7, xii, 371-378.

Farez (P.). La psychologie des calculateurs prodiges. Rev. de l'hypnot. et psychol. physiol., Par., 1896-7, xi, 330-332.

Féré (C.). Note sur un cas de psychose migraineuse. Rev. de méd., Par., 1897, xvii, 390-395.

Féré (C.). Asystolie post-épileptique. Rev. neurol., Par., 1897, v, 153-157.—Excès vénériens et épilepsie. Compt. rend. Soc. de biol., Par., 1897, 10. s., iv, 331-333.

Ferraud. Un cas d'hystéro-épilepsie traitée par l'électricité; guérison. Limousin méd., Limoges, 1897, xxi, 54-56.

Finzi (J.). Psicosi febbrili. Riforma med., Napoli, 1897, xiii, pt. 2, 147; 158.

Forfar (J. E.). Hystero-epilepsy. Canad. M. Rev., Toronto, 1897, v, 216-222.

François (L.). Aphasie et agraphie d'origine syphilitique; éclat tympanique du 2e bruit du coeur du à la distension de l'estomac. Marseille méd., 1897, xxxiv, 303-306.

French (J. M.). A case of morphine-cocaine addiction, with abrupt self-stopping. Am. Therapist, N. Y., 1896-7, v, 257-260.

Furness (W. J.) and B. R. Kennon. The legal responsibility in epilepsy. State Hosp. Bull., Utica, 1897, ii, 66-77.

Gairdner (W. T.). Aphasia and will-making. Brit. M. J., Lond., 1897, i, 1511.

Garnier (P.). Dispositions législatives relatives à l'internement des aliénés. [Abstr.] Rev. de méd. lég., Par., 1896, iii, 260; 312; 327; 1897, iv, 47; 91; 117.

Gaupp (R.). Neuere Arbeiten über die progressive Paralyse der Irren. Monatschr. f. Psychiat. u. Neurol., Berl., 1897, i, 255-274.

Geist (F.). Ueber die atypischen motorischen Reizerscheinungen des epileptischen Anfalles. Cor.-Bl. d. allg. ärztl. Ver. v. Thüringen, Weimar, 1897, xxvi, 25; 57.

Gilles de la Tourrette. Sein hystérique. Rev. de psychiat., Par., 1897, n. s., 135-141.

Givens (J. W.). The diagnosis of insanity. South. Calif. Pract., Los Angeles, 1897, xii, 84-89.

Glorieux. Un jeune garçon hystérique avec dédoublement de la mémoire et retour en enfance. J. de neurol. et hypnol., Par., 1897, ii, 191.

Godding (W. W.). Then and now, being pictures from the past. Proc. Am. Med.-Psychol. Ass., Utica, 1896, 258-271.

Green (J. L.). An observation [speech of a lunatic]. West. M. Rev., Lincoln, Neb., 1897, ii, 69.

Hoch (A.). General paralysis in two sisters, commencing at the age of ten and fifteen, respectively; autopsy in one case. Proc. Am. Med.-Psychol. Ass., Utica, 1896, 303-318.

Holt (Elizabeth D.). Some observations upon the training of the mentally deficient epileptic child. Pediatrics, N. Y. & Lond., 1897, iii, 444-448.

Hotchkiss (R. D.). On general paralysis of the insane, with notes of an unusual case. Glasgow M. J., 1897, xlvii, 417-423.

Howard (W. L.). Psychical hermaphroditism; a few notes on sexual perversion, with two clinical cases of sexual inversion. Alienist & Neurol., St. Louis, 1897, xvii, 111-118.

Howe (Delia E.). Training schools for attendants. J. Psycho-Asthenics, Faribault, Minn., 1896-7, i, 75-84.

Hrdlicka (A. F.). A few words about anthropometry. Am. J. Insan., N. Y., 1897, liii, 521-533.

Hrdlicka (A. F.). Pathological Institute of the New York State Hospitals. Department of anthropology. Outline of its scope and exposition of the preliminary work. State Hosp. Bull., Utica, 1897, ii, 1-18.

Jentsch (E.). Roncoroni's Theorie der physiologischen Genese der Paranoia. Centralbl. f. Nervenh. u. Psychiat., Coblenz & Leipz., 1897, n. F., viii, 177-179.

Jonas (A. F.). Post-operative insanity; three cases. West. M. Rev., Lincoln, Neb., 1897, ii, 125-128.

Kellogg (T. H.). The disorders of the muscular system in insanity. Proc. Am. Med.-Psychol. Ass., Utica, 1896, 241-257.

Kellogg (T. H.). A text-book on mental diseases for the use of students and practitioners of medicine. N. Y., 1897, Wm. Wood & Co. 791 p. 8°.

Kéraval (P.). Les symptômes de l'aliénation mentale. Echo méd. du nord, Lille, 1897, i, 211-214.

Kiernan (J. G.). Encephalitic and late epilepsy. Alienist & Neurol., St. Louis, 1897, xviii, 168-179.

Kirkendall (J. S.). Epilepsy and eye strain. N. York M. J., 1897, xlv, 523.

Kovalevsky (P.). La folie à deux. Rev. de psychiat., Par., 1897, n. s., 93-96.

von Krafft-Ebing. Vielfache impulsive Brandstiftungen seitens einer imbecillen Epileptischen. Friedreich's Bl. f. gerichtl. Med., Nürnb., 1897, xlviii, 24-34.

Krause. Ueber Zustände von Verwirrtheit mit Aufregung oder Stupor im Beginne und Verlaufe der chronischen Paranoia. Monatschr. f. Psychiat. u. Neurol., Berl., 1897, i, 359-378.

Kuhlmann (Helene). The blood in epilepsy. State Hosp. Bull., N. Y., 1897, ii, 77.

Labord et Legrain. L'alcoolisme en France. Tribune méd., Par., 1897, 2. s., xxix, 447-452.

Lande (P.-L.). Rapport médico-légal sur un cas de délire de dépossession. Rev. de psychiat., Par., 1897, n. s., 65-67.

Larroussinie. Hallucinations succédant à des obsessions et à des idées fixes. Mém. et bull. Soc. de méd. et chir. de Bordeaux (1896), 1897, 232-238.

Laudenheimer (R.). Paralytische Geistesstörung in Folge von Zuckerkrankheit (diabetische Pseudo-Paralyse). Arch. f. Psychiat., Berl., 1896-7, xxix, 546-565.

Lee (W.). The amelioration of the condition of the insane; a history of the steps taken by the Lunacy Commission since its inauguration. Maryland M. J., Balt., 1897, xxxvii, 132-135.

Lepine (R.). Sur un cas de cécité psychique des choses. Lyon méd., 1897, lxxxv, 71-73.

Lyon (S. B.). The new insanity law and the commitment of the insane. N. York M. J., 1897, lxv, 477.

Macdermott (W. R.). The increase of insanity in England. Med. Press & Circ., Lond., 1897, n. s., lxiii, 454-456.

Maclachlan (J. T.). General paralysis of the insane. Glasgow M. J., xlvii, 423-430.

Maclachlan (J. T.). Insanity of different periods of life; evolutional and involuntary types. Glasgow M. J., 1897, xlvii, 182-197.

Magnan (V.). Leçons cliniques sur les maladies faites à l'asile clinique (Sainte Anne) recueillies et publiées par le Dr. Pécharman. Deuxième serie. Par., 1897, F. Alcan. 250 p. 8°.

Mania acuta prodotta da un microrganismo speciale. Salute pubb., Perugia, 1897, x, 119-121.

Manning (H. J.). Cases in lunacy practice. J. Ment. Sc., Lond., 1897, xliii, 313-321.

Marandon de Montyel (E.). L'internement des aliénés. Ann. d'hyg., Par., 1897, 3. s., xxxvii, 502-525.

Mariet et Virés. Un stigmate permanent de l'épilepsie. Bull. gén. de thérap. [etc.], Par., 1897, cxxxii, 193-199.

Massaro (D.). Le auto-intossicazioni nelle malattie mentali. Pisani, Palermo, 1896, xvii, 193-211.

Mays (T. J.). Increase of insanity and consumption among the negro population of the South since the war. Virginia M. Semi-Month., Richmond, 1897-8, ii, 129-133.

McGrew (F. A.). Epilepsy: its surgical treatment; with the report of a case. Medicine, Detroit, 1897, iii, 367-375.

McMichael (G. H.). Some thoughts upon alcoholism. Med. Rec., N. Y., 1897, li, 839.

Meyer (A.). A short sketch of the problems of psychiatry. Am. J. Insan., Chicago, 1897, liii, 538-549.

Motet et P. Dubuisson. Un anarchiste persécuté; rapport médico-légal. Arch. d'anthrop. crim., Lyon et Par., 1897, xii, 279-288.

Moyer (H. N.). The nervous and mental phenomena following surgical operations. Medicine, Detroit, 1897, iii, 441-445.

Murdoch (J. M.). Feeble-minded children. Pittsburgh M. Rec., 1897, xi, 65-69.

Neff (I. H.). The relation of hysteria to insanity. Physician & Surg., Detroit & Ann Arbor, 1897, xix, 103-107. [Discussion], 129-131.

Newbecker (Minerva M.). The menstrual function in insane patients and the effects of ovariotomy. West. M. Rev., Lincoln, Neb., 1897, ii, 169-171.

Nouvelles contributions au traitement de l'épilepsie par le bromure et l'opium combiné (traitement de Flechsig). Bull. gén. de thérap. [etc.], Soc. de thérap. . . . Par., 1897, ii, 289-594.

Nuckolls (Lillian J.). Treatment of melancholia with opium. Med. Rec., N. Y., 1897, li, 880.

Pellizzi (G. B.). A proposito dell origine dell' otoematoma dei pazzi. Riv. di patol. nerv., Firenze, 1897, ii, 125-127.

Peterson (F.). The psychology of the idiot. Proc. Am. Med.-Psychol. Ass., Utica, 1896, 272-298.

Piccinino (F.). I microbi nelle malattie nervose e mentali. Correire san. Settim., Milano, 1897, viii, no. 16, 1; no. 17, 1-5.

de Pietra Santa. Suicide et folie suicide. J. d'hyg., Par., 1897, xxii, 229-233.

Pilgrim (C. W.). Speech disturbances in epileptics. State Hosp. Bull., Utica, 1897, ii, 54-58.

Preston (George J.). Hysteria and certain allied conditions, their nature and treatment, with special reference to the application of the rest cure, massage, electrotherapy, hypnotism, etc. Phila., 1897, P. Blakiston, Son & Co. 302 p., 8°.

Ray. Acute melancholia occurring in a child. N. York M. J., 1897, lxv, 743-745.

Raymond. Deux cas d'aboulie. Bull. méd., Par., 1897, xi, 286.

Reinhold (G.). Ueber einen Fall von Delirium tremens paraldehydicum. Therap. Monatsh., Berl., 1897, xi, 300-302.

Reynolds (E. S.). Remarks on the recent treatment of epilepsy. Med. Times & Hosp. Gaz., Lond., 1897, xxv, 335; 349.

Robertson (J. W.). The morphine habit, its causation, treatment, and the possibility of its cure. Pacific M. J., San Fran., 1897, xl, 270-278.

Rohé (G. H.). The economics of State care of the dependent insane. Maryland M. J., Balt., 1897, xxxvii, 129-132.

Rowley (A. S.). Delirium grave. Am. J. Insan., Chicago., 1897, liii, 550-559.

Sanjuan (M.). Sur les hallucinations symboliques dans les psychoses et dans les rêves des sourds-muets. Arch. de neurol. Par., 1897, 2. s., iii, 161-176.

Séglas (J.). La confusion mentale. Presse méd., Par., 1897, 117-119.

Séglas (J.). Considérations cliniques et médico-légales sur l'amnésie rétrograde dans l'épilepsie. Presse méd., Par., 1897.

Shaw (T. C.). On wounds and bruises in the insane. St. Barth. Hosp. J., Lond., 1896-7, iv, 87-91.

Significance (The) of palatal deformities in idiots. Med. Rec., N. Y., 1897, li, 808.

Silbermann (O.). Ein interessanter Fall von männlicher Hysterie. Allg. med. Centr.-Ztg., Berl., 1897, lxvi, 538.

Soukhanoff (S.). Sur les formes diverses de la psychose polynévritique. Rev. de méd., Par., 1897, xvii, 317-370.

Spehl. Epilepsie jacksonienne; traitement par la suggestion indirecte; guérison. Rev. de l'hypnot. et psychol. physiol., Par., 1896-7, xi, 265-268.

Spratling (W. P.). The moral treatment of epilepsy. State Hosp. Bull., Utica, 1897, ii, 59-65.

Stedman (H. R.). The prognosis and duration of attacks of mental disease. Boston M. & S. J., 1897, cxxxvi, 566-570.

Stone (B. W.). Home treatment of insanity. South. Pract., Nashville, 1897, xix, 237-246.

Sudduth (W. X.). Modern methods of treating epilepsy. Medicine, Detroit, 1897, iii, 272-280.

Sweeney (A.). Crime and insanity. Northwest. Lancet, St. Paul, 1897, xvii, 203-211.

Talcott (S. H.). Some physical states in melancholia. State Hosp. Bull., N. Y., 1897, ii, 51-53.

Talcott (S. H.). Hospital construction and the care and cure of the acute insane. Hahneman Month., Phila., 1897, xxxii, 354-374.

Teeter (J. N.). The auto-toxic origin of epilepsy. Alienist & Neurol., St. Louis, xviii, 203-211. Also: Am. Med.-Surg. Bull., N. Y., 1897, xi, 508-511.

Teufelaustreibung (Eine). Irrenfreund, Heilbr., 1896, xxxviii, 149.

Tomasini (S.). L'otoematoma dei pazzi come carattere di degenerazione. Riv. sicula di med. e chir., Palermo, 1897, iv, 25-40.

Toulouse. Enquête médico-psychologique sur les rapports de la supériorité intellectuelle avec la névropathie. Ann. méd.-psychol., Par., 1897, 8. s., v, 304; 425.

Toulouse (E.). Enquête médico-psychologique. Méd. orient., Par., 1897, i, 121-128.

Tuke (J. B.). A series of clinical cases illustrative of the insanities. Edinb. M. J., 1897, n. s., i, 349-355.

Vallon (C.) et A. Marie. Des psychoses religieuses à évolution progressive et à systématisation dite primitive. Arch. de neurol., Par., 1896, 2. s., ii, 417; 1897, 2. s., iii, 26; 176.

Vallon (C.). Tentative d'homicide volontaire par un aliéné persécuté. Ann. d'hyg., Par., 1897, 3. s., xxxvii, 538-544.

Vanselow (C.). Epileptisches Irresein; Entmündigung. Friedreich's Bl. f. gerichtl. Med., Nürnb., 1897, xlviii, 43-49.

Vaquier. L'alcoolisme. Rev. théor. et prat. d. mal. de la nutrition, Par., 1897, v, 293-311.

Vogt (A.). Hysteria virilis. Norsk Mag. f. Laegevidensk., Kristiania, 1897, 4. R., xii, 78-80.

Voisin (A.). Délire de persécution; kyste dermoïde de l'ovarie; laparotomie; disparition des troubles mentaux. Rev. de psychiat., Par., 1897, n. s., 46-49.

Voisin (J.). Le traitement de l'accès d'épilepsie. Rev. de l'hypnot. et psychol. physiol., Par., 1896-7, xi, 327-329.

Wildermuth. Alkohol, Trauma und Epilepsie. Ztschr. f. d. Behandl. Schwachsinn. u. Epilept., Dresd., 1897, n. F., xiii, 49-59.

Wildermuth. Zur Aetiologie der Epilepsie. Med. Abhandl. Festschr. d. Stuttg. ärztl. Ver., 1897, 166-180.

Wilson (J. T.). Mental complications following surgical operations. Tr. South. Surg. & Gynec. Ass., 1896 [Phila.], 1897, ix, 63-78.

Witmer (A. F.). Is there a daily rythm in epilepsy? Med. & Surg. Reporter, Phila., 1897, lxxvi, 549-552.

Worcester (W. L.). Cases of paraphasia and word-deafness. Proc. Amer. Med.-Psychol. Ass., Utica, 1896, 113-133.

Ziegler. Bemerkungen zum gemütlichanregenden Unterricht in Idiotenklassen. Ztschr. f. d. Behandl. Schwachsinn. u. Epilept., Dresd., 1897, n. F., xiii, 36-45.

Half-Yearly Summary

The present SUMMARY is an almost unbroken record of medical progress. Of the twenty-two institutions included, two (Little Rock and Colorado) urge the pressing need of hospital buildings for the sick and infirm; at two (Montreal and Kalamazoo) hospital and infirmary wards are ready for occupancy; and in twelve (Napa, Georgia, Idaho, Catonsville, McLean, Kalamazoo, Newberry, Trenton, Newark, Buffalo, St. Lawrence, and Montreal) laboratories have been begun or are in contemplation. In other institutions some special features of clinical work are recorded. The equipment of these numerous laboratories for clinical investigation rather than for *post-mortem* study, is a noticeable feature, and is a healthy mark of the desire to expend the greatest effort upon the individual patient. That the demand for scientific work has been thus early diverted from pathological investigation to the study of the clinical manifestations of disease is a matter for congratulation. The establishment of a laboratory for the examination of the blood, the secretions and the excretions, is a comparatively easy and inexpensive undertaking, and one offering far better opportunities to the assistant physician fresh from college or the general hospital than the elaborate apparatus required for the elucidation of the intricate problems of cerebral structure and function.

In Michigan it is proposed to unite the State Hospitals with the State University at Ann Arbor, for the improvement of the medical service and for the development of pathological work after the manner inaugurated by the New York State Hospitals in their Pathological Institute. The suggestion has been well received by the University authorities. In his argument in favor of the proposed step, Dr. Edwards refers to the "criticism that asylum physicians soon get into routine ways, and are not benefited by the stimulus that comes from the sharp competition of those in general practice." The present SUMMARY is strong evi-

dence of the injustice of such criticism. It is doubtful whether reports at random from an equal number of general hospitals for the sick and injured would reveal a greater degree of well-directed and disinterested effort for the relief and welfare of their patients.

ARKANSAS.—*State Lunatic Asylum, Little Rock.*—Repairs to the amount of $8000 have been made to the Insane Hospital at Little Rock, Ark. New tile floors and bath-tubs have been put in all the water-closets and lavatories, and new floors in three wards. Another boiler (75 H. P.) has been added to the engineer's department, electric lights have taken the place of the former gasoline gas lights, and the whole interior has been repainted and plastered. For the treatment of acute cases, one ward for each side has been set apart and is used. It is to be hoped that the next General Assembly will make provision for the erection of a hospital for the acute sick, apart from the main buildings.

CALIFORNIA.—At the last session of the California Legislature a new Insanity Law was passed and approved by the Governor. The main points of the new law, which are different from the old law and of general interest, are:

Provision for a State Commission in Lunacy, composed of the Governor, Attorney General, Secretary of State, the Secretary of the State Board of Health, and a General Superintendent, who is appointed by the Governor. This commission has general supervision of the State hospitals for the insane. The power of the commission does not interfere with or embarrass the control of the Board of Managers of each hospital.

The names of the institutions for the treatment and care of the insane have been changed from "Insane Asylums" to "State Hospitals"; the physician in charge is the medical superintendent. He must have had three years' experience in the care and treatment of the insane. The first assistant must have had two years' experience, and the second one year's experience in the care and treatment of the insane. The third assistant, the internes and all subordinate officers and employees are appointed by competitive examinations.

"The Board of Supervisors of each county shall provide for and furnish, at or in the city, city and county or receiving hospitals, a suitable room or rooms for the detention, board, care and treatment of the alleged insane." "In no case . . . shall such person be committed to any prison, jail, or lock-up for criminals and drunkards, nor shall he be confined in the same room with a person charged with or convicted of crime." The period of detention cannot be less than one nor more than twenty days. Medical examiners in each county are appointed by the Lunacy Commission, and the medical examination is prior to the legal, and is of chief importance—a complete reversal of the former methods.

It is provided that patients who have not acquired a residence in the

State prior to their admission to the hospital may be returned to the county or State to which they belong.

It is provided that uniform medical records shall be kept, the forms to be determined by the Commission.

—*Napa State Hospital.*—A residence for the medical superintendent is in process of construction, and two more are to be built for the first and second assistants, respectively. In the construction of these and all other buildings, the greater part of the labor is done by patients. The construction of these residences will render available for use of the hospital a large amount of space, which will be fitted up as operating rooms, a clinical laboratory, etc., which have heretofore been impossible because of lack of room.

COLORADO.—*State Insane Asylum, Pueblo.*—Regular lectures are given to attendants, who will be required to pass a final examination in their studies and in their practical work. No attendants will be retained who do not show satisfactory improvement. All new attendants who are engaged must be trained before entering the asylum, and if not graduates of some training school for nurses, must submit to an examination.

A staff of attending physicians have volunteered their services to visit the asylum at regular times and attend gratis any cases assigned them by the superintendent in their special departments.

The improvements during the last two years have been quite extensive; among the most important has been that of sinking a well at a convenient point for an additional water supply, and the removal of our pumping station from the river bank to the new point of supply. The saving in distance and the improvement in the quality of water have amply repaid the labor and expense incurred.

A new and excellent bakery has been constructed, which has proved a great help in the work of the culinary department.

The new cottage building for males, which could not be completed in 1894 for want of funds, was completed and occupied in September, 1895. The opening of these wards has made it practicable to receive all male cases for which application has been made during the past year.

In the last biennial report Dr. Thombs urges the need of a hospital entirely separate from the main buildings, where the sick and helpless can receive the care demanded by their condition. The room occupied by the sick is needed, and from every view it is the duty of the State to care for the sick in a separate building. The building should be modern and fully provided with appliances either for medical or surgical work. It should have a separate kitchen so that a dietary for the sick could be prepared in accordance with the needs of the patient.

GEORGIA.—*Georgia Lunatic Asylum, Milledgeville.*—Several wards have been set aside and especially equipped as infirmary wards. Bright, airy wards have been selected, and everything possible done to fit them for the intended service, and when the cottages for the assistant physicians

are completed the centre buildings of both male and female convalescent buildings will be converted into infirmary wards, and rooms in each building set apart for surgical work and thorough clinical examinations. The basements will be used for giving nurses special training in cooking for the sick, which will improve their service.

All cases of serious illness in these buildings will be at once removed to one of these wards, where special attention may be given them by nurses trained for this duty.

A course of lectures has been delivered to the white female nurses by the superintendent of nurses, with the result of greatly increasing the efficiency of the service, as evinced by greater interest and intelligence shown by the nurses in general in the discharge of their duties and in their attitude towards patients. The subjects taught have been anatomy, physiology, the general work of the sick room, chart making, and the recording of data relating to the condition of the patients, etc. The textbooks used are "Domville's Manual for Hospital Nurses" and "Handbook for the Instruction of Attendants on the Insane." Throughout the year weekly lectures have been delivered by the physician in charge to the nurses of the colored female department. The subjects touched upon were anatomy, gross and minute, physiology, bacteriology, mental diseases, bandaging, preparing surgical dressings, and the keeping of charts and records at the bedside. Special cookery for the sick is to be taken up.

Several rooms have been fitted for surgical work. Two aseptic operating tables and many necessary instruments have been purchased, in order that such operations as may become necessary through accident, or which are expedient for the welfare of the patients, may be performed under modern aseptic precautions. The end in view is to finally provide performance of the most delicate and serious tasks in the field of surgery, in order that patients may be given the benefit of any aid which this branch of medicine may offer. Several major operations have recently been satisfactorily performed.

Segregation of all cases of pulmonary tuberculosis has been carried out in the female colored department, and all possible precautions taken towards disinfection of sputum and the rooms occupied by this class. A separate court for open air exercise will soon be prepared for them. The result of this procedure only time can demonstrate, but it is hoped thereby to lessen the alarming mortality from this cause, which, among the female negro insane, reaches its highest limit. The sputum of suspects is immediately submitted to microscopical examination and steps taken according to the findings.

A suitable room, with illuminating apparatus, has been arranged in order to facilitate laryngoscopical and ophthalmological work, and satisfactory examinations of the throat and eyes can now be made.

The annual report of the asylum contains an interesting report by the pathologist, Dr. T. E. Oertel.

IDAHO.—*The Idaho Insane Asylum, Blackfoot.*—Dr. John W. Givens has

been reappointed to the superintendency. There are now one hundred and seventy-five patients and twenty-two employees in the institution. A clinical laboratory is being fitted up.

The planning and work of a few years ago for the asylum farm (there are two thousand acres in the farm) is now giving good results. The orchard is beginning to bear, and in a few years will produce all the fruit needed in the asylum. The herd of cows is now producing a little over seven hundred pounds of milk, and making twenty pounds of butter per day. All of the hogs and hog products needed are produced, and Dr. Givens is quite a believer in Beard's doctrine that the American hog is one of the best antidotes for American nervousness.

MAINE.—*Eastern Maine Insane Hospital, Bangor.*—The Commission upon this new institution have appended a preliminary report to that of the Maine Insane Hospital at Augusta.

The contracts so far made and partially completed include the general construction of central buildings, without plastering or interior finish; the general construction of the domestic department (kitchen, laundry and boiler house), with a part of the interior finish. No plumbing, heating or electric work could be included in these first contracts, owing to the limited amount of money available.

The stone obtained by the grading of the lot has been utilized in the construction of the domestic department buildings, foundation walls for all buildings, and in the roads.

A fine spring of water has been found upon the lot and has been walled up. This water is pure, clean and soft, and as there is evidence of an abundance of water in the hill, the Commissioners are seriously considering the advisability of drilling an artesian well for the purpose of obtaining an adequate and pure supply for the hospital.

In all the work so far contracted for, and in the details of work to be done in the future, the Commissioners have guarded the interests of the State, and while everything is to be done substantially and well, no extravagances have been allowed to creep in. The work so far executed has been well done and to the entire satisfaction of the Commission, and if future contracts shall be as well carried out there can be no criticism of the strength and durability of the buildings.

—*Maine Insane Hospital, Augusta.*—In their annual report the trustees make the following note upon the criminal insane:

"The Insane Department of the State Prison at Thomaston in a measure satisfies the demands of the criminal insane for humane treatment, and removes the objection of bringing that class in close contact with the worthy but unfortunate insane citizens of the State. It has, however, come to our attention that the courts of the State do not recognize the right of sending men to the insane department at Thomaston for observation, even when charged with high crime, when the plea of insanity is set up by the counsel for defendant; but now send such inmates of our jails to the Maine Insane Hospital. Dangerous and crafty

prisoners, suspected of crime, have been lodged in our State Hospital, with results of a very objectionable experience. An adroit and nearly successful attempt was recently made to escape by one of these suspected criminals, placed at our Hospital "for observation" by order of the court, which not only endangered the life of himself, but that of the attendants. It seems to the trustees that such persons should be sent to the insane department at Thomaston, or that a suitable building or apartments should be erected or provided at Augusta for the accommodation and safety of this character of patients, while under the observation of the superintendent; and we ask for a suitable legislation to bring about this result."

Dr. Sanborn sends the following communication to the SUMMARY: "An additional physician was employed on the medical staff the first of July, and the staff now consists of a superintendent and four assistants, one of whom is a lady physician. No epidemics of any character have prevailed, and an unusual degree of health has pervaded the entire institution. We have been quite occupied in the construction of a new power-house and the setting of new and larger boilers, in which are introduced the Hawley system of heating. We took precaution to construct sufficiently large so that we can in the future generate our own electric current, which is now being supplied from the city plant. It may be of interest to add in this connection that we have made a new departure, in that we have erected a chimney on a very much larger plan than the existing old one, the flue of which is six feet five inches in diameter, and one hundred and eighty feet high, the boiler-makers insisting that this would give the best practical results and materially lessen the consumption of fuel. It may possibly be of interest to the management of other institutions to know that during seven months of the year the institution receives its heat from the Augusta Lumber Company's plant over twenty-five hundred feet distant. It is found entirely practical for materially lessening the cost of heating, and is of pecuniary benefit to the mill owners as well, inasmuch as they can consume their sawdust and all refuse material, which could not be disposed of in any other way and would be entirely worthless."

MARYLAND.—*Maryland Hospital for the Insane, Catonsville.*—Since the last statement made by the JOURNAL, many valuable and necessary improvements have been made. An electric-light plant has been established, taking the place of the gas; new hard-wood floors have been laid in nearly every ward in the hospital; a new and improved system of locks has been added; the entire woodwork of the building has been repainted. An increased effort has been made to give suitable employment to as many of the patients as possible. With this object in view a shoe shop has been opened and eight men trained in this line of work. A tailor shop is contemplated, and will be started as soon as a suitable building can be erected. The fire house has been enlarged and additional apparatus added; a pathological laboratory, under the direction of Dr. Cornelius Deweese,

has been established, and careful examination is made and records are kept of the blood, urine, sputa and secretions. Special work has been done looking towards the restriction of tuberculosis in the hospital. Efforts in this direction were rewarded last year by a decided reduction of the death rate from that disease. Isolation has been rigidly enforced; careful disinfection of all clothing, bedding and such articles as were in contact with the patients has been carried out, and constitutional treatment has been adopted in every case. The hospital now contains 510 patients, the largest number in its history.

MASSACHUSETTS.—*McLean Hospital, Waverly.*—The following extract is made from the Annual Report: "The voluntary cases were six more than one-third of all admissions. . . .A large proportion were, as usual, cases of melancholia. The summary of the medical work of the year shows some notable effects resulting from the circumstances attending the transfer of the patients from Somerville to Waverly late in the previous year. By the removal of chronic cases, room was made for recent cases in the new hospital, and the number of admissions to it, in its first year, were fully equal to the average at Somerville. But the care exercised in granting the privileges of the hospital to the more strictly recent cases, as having the stronger claim, caused a material increase in the proportion of this class. It is noteworthy, in this regard, that the movement of the hospital population showed increased activity; on the basis of a daily average of 138 throughout the year, there were about as many changes of patients coming and going as when the usual average was 175. There is a special significance also in the fact of the tendency to let convalescing patients go home earlier on trial; in this fact is manifested one of the beneficent results of the better conditions afforded by the new hospital. The patients are, doubtless, so influenced by the improved comforts and attractions of the new houses, within and without, as to permit greater freedom in granting the liberty of the grounds; the tests of self-control can be sooner applied, and, while these are naturally contributing to the curative influences, the convalescing patient earlier shows self-reliance and trustworthiness.

"Some progress has been made in developing the methods of clinical work in connection with that of the laboratory with its facilities for investigation. While Dr. Hoch has pursued his studies and demonstrations in anatomical pathology, which should never be neglected in a hospital of this kind, the work of a clinical laboratory has also been carried on. The studies of special problems undertaken by the internes are represented by a paper published by Dr. Capps at the beginning of the year, entitled, 'A Study of the Blood in General Paralysis'; and another by Dr. Hibbard, on 'A Study of Urea and Uric Acid in Melancholia,' is expected soon to appear. Dr. Burrows is about to complete 'A Study of Leucocytosis associated with Convulsions.' Besides these special subjects, the work in medical chemistry is maintained for current clinical purposes.

"The clinical conferences were continued twice each week during the

year, which amounted to careful consultations by the medical staff upon every case admitted. The substance of these discussions was recorded, together with the diagnosis and prognosis. Upon the discharge of every patient, also, the case was reviewed and the conclusions of the original discussion tested by its hospital history and termination. This method is proving to be most instructive and valuable in the better understanding that is being gained by the more precise discrimination of different forms of mental disorder, by the better appreciation of the data for prognosis, and by the indications for treatment.

"While the medical work of the year has been going on under favoring conditions, it was a time of adjusting and perfecting the business organization of the hospital. This has to wait upon the completion of the construction, in many details, in respect to minor arrangements and appliances which are still of material importance for ease and economy of administration. Progress must be slow in carrying on these processes, but they are now so far advanced, as regards the most essential matters, that more attention can be given to those refinements which make a habitation homelike and attractive.

"The gymnasiums for men and women will soon be occupied for recreation, exercise, and work in the shops. But in anticipation of having properly adapted places for these purposes, much has been done to develop the long contemplated plans.

"Exercise for its direct remedial effects in the form of physical training, by general and medical gymnastics, including outdoor exercises, has been directed by the instructors in physical training—by Mr. Skarstrom for the men, and Miss Hurlbutt for the women. The indoor facilities for gymnastics were limited, being confined to the occasional use of the new entertainment hall for the men, so that much attention was given to outdoor exercise for them. In one of the gardens there was arranged what was practically an open-air gymnasium.

"Exercise was joined with recreation in various games, such as quoits, croquet, tennis, golf, base ball, and 'medicine ball.' Some labor was performed in stated daily tasks in the care of tennis courts, croquet grounds, golf links, flower beds, etc. In its season there was skating, which was enjoyed by ten patients, and walking excursions were popular during spring and summer. The class in wood-carving deserves special mention.

"The nurses receive, systematically, instruction in gymnastics as a part of their training; this enables them to aid in applying this form of treatment for the benefit of the patients. The nurses, both men and women, have the advantage of the new school kitchen for instruction in cookery and in the serving of food. Every woman nurse spends twenty-five forenoons in the kitchen in the presence of the instructor, Miss Brandt, who has the supervision, also, of the work in all the patients' dining-rooms, and the house kitchens, of which there is one for every house. With these facilities, the dietary has been greatly improved in quality and variety as the result of study and experiment during the year."

MICHIGAN.—At the meeting of the Joint Board of Trustees of the Michigan Asylum, held at Newberry, July 15, 1897, Dr. Edwards presented a paper on "Pathological Work in our Asylums." Dr. Edwards proposed an affiliation of the several State asylums, including that for Dangerous and Criminal Insane, with the State University at Ann Arbor.

This plan, to be hereafter elaborated and completed for the co-operative study of mental disease by the several asylums in conjunction with the pathological department of the University, would obviate the necessity of employing a skilled pathologist, the erection of laboratories or any marked or considerable expense. It would be necessary that the work be laid out systematically and placed under the direction of the professor of pathology of the University and a committee from the Asylums. Each institution may pursue some definite line of study of its own selection or that may be appointed for it by a committee having the matter in charge. Our junior assistant physicians, or those of them who are specially interested in such work, could be directed from time to time to spend a week or two or more at Ann Arbor in the study of the technical methods of staining and mounting tissues, and in the study of bacteriology and other topics that might arise.

In this way they not only would be benefited by the actual information to be obtained, but would be brought closer in touch with medical thought and progress as expounded at the University, which is the accredited mental centre of the State, and thus obviate the criticism that asylum physicians soon get into routine ways and are not benefited by the stimulus that comes from the sharp competition of those in general practice.

Dr. Edwards read a letter from Dr. Vaughan, dean of the Medical Department of the University of Michigan, expressing hearty approval of the proposed plan. A committee was appointed to confer with the University.

—*Michigan Asylum for the Insane, Kalamazoo.*—The hospital for paralyzed, bedridden and generally infirm cases in the male department is completed and ready for occupancy. It accommodates one hundred patients and provides room for the necessary nursing staff. The superstructure is of brick, built upon a foundation of Ohio stone extending ten feet above the grade; interior finish of hard wood and walls plastered. The building is lighted by electricity, and heating and ventilation are provided by the fan system, the heat coming from the central plant and is controlled by the Johnson electric automatic regulating device. The details of construction and interior arrangement conform to the special purpose of the building.

The detached building on the female side for the reception of new cases and the treatment of curable forms is in course of erection and will be completed within the coming year.

The residence for the assistant physician in charge of Fair Oaks Colony is well under way.

A general dining room for convalescent and comfortable cases on the female side was built this summer and is now in use. It is one story,

brick, on a stone foundation, floor is of tile and the walls plastered. It is adjacent to the kitchen, connected by a covered way, and will accommodate about two hundred patients.

Medical.—No new therapeutic agent has found especial favor with the staff during the past year, but there is a deepening in the feeling of the utter insignificance of drug therapeutics as compared to remedial effort by means of diet, sleep, exercise, occupation, electro- and hydro-therapeutics, etc. An accessible and well appointed laboratory has been provided, as well as a surgery and an examination room. The examination of patients has been arranged in four departments: 1. General appearance and anthropometrical examination. 2. Physical examination. 3. Physical examination (micro-chemical). 4. Neurological and physical examination. Each of these divisions is in charge of an assistant physician who gives that particular subject his special study and, when the examination is completed, the case is presented at the daily staff meeting, when there is a comparison of reports, and if possible, diagnosis, prognosis and treatment are decided upon.

The general health in the institution has been particularly good during the past year, there being comparative freedom from acute physical disease of any kind and a dearth of accidents.

The training school work is resumed to-day with an enrollment of 75. Lectures and ward demonstrations are given every day, and we feel that our efforts are well repaid in the increased efficiency of the nursing staff.

—*The Upper Peninsula Hospital for the Insane,* located at Newberry, Michigan, opened November 1, 1895, which is the only one in the State built on the "Cottage Plan," has now about two hundred and fifty patients under treatment. In December of last year two cottages were completed, one a cottage for disturbed patients, and the other a large infirmary for both male and female patients; in the first story, in addition to a ward for male patients, is a suite of rooms for reception and treatment. Here are two electrical machines, a Van Houten and Ten Broek static and a Ranney forty-four cells combined faradic and galvanic. The second story is devoted to female patients, and in the third are the operating rooms, fitted up with tile flooring and a dome-shaped ceiling of glass so arranged that the light falls where it is most needed. This room is furnished with an improved Boldt operating table and other necessary appliances, all of the latest models. Adjoining this room is another room expressly for anaesthesia and massage.

At present there are under construction a central kitchen and dining-room to accommodate five hundred patients, and a cottage with a capacity for fifty male patients. The buildings are connected by cloisters, and all patients who are able will congregate in this dining hall for their meals. The buildings are constructed of pressed brick, in the most substantial manner. The hospital is under the management of Samuel Bell, M. D., medical superintendent, formerly of Detroit.

—*The Oak Grove Hospital at Flint* has been doing some creditable X-ray work. Dr. Burr sends to the SUMMARY a photograph of a bullet located

in the hand of a boy. The case in the practice of a physician in Flint subsequently came to successful operation. The picture is a most creditable specimen of X-ray work.

MINNESOTA.—The last Legislature, by reason of the division into two parties, each favoring its special town as site for the fourth State hospital, finally adjourned, no site or appropriation having been determined upon. Thus the "crowding" of existing State hospitals continues, the extended accommodation at Fergus Falls only to a slight extent taking up the surplus.

As a side result of the failure of the Legislature to provide, there arose a few advocates of the Wisconsin system, and a study of that system is provided for. The best judges, however, do not seemingly favor such plan.

A law was passed providing for a re-examination of the present hospital population, and a decision in regard to any that might be cared for outside easily and without danger, by virtue of which they could be forcibly sent back to relatives or to the counties. This is just being put into force. An indirect (and probably unintended) result is to revive the county poorhouse care of insane, so strongly condemned a few years ago, for the tendency even now noted is to select the pauper harmless dements. The more wealthy population have largely sent their relatives for good cause, and doubtless will have influence to keep them or return them to the hospital.

Another law was passed providing the returning of the non-resident insane to their proper residences. This brings up some complicating circumstances, as families moving into this State from other States would not be considered residents or entitled to accommodations in the State hospital under one year. It is thought that the non-residents of the State committed to the hospitals will be about evenly balanced by the residents who will have been committed in other States, and a general system of exchange would merely result in the cost of transfer and added labor, without decrease in the population of the State hospitals.

—*The Rochester State Hospital* is now being wired for electric lighting, and the only building of the year is the building made necessary for this purpose.

NEW JERSEY.—*New Jersey State Hospital at Trenton.*—Dr. Ward writes: "A laboratory for pathological and bacteriological work is nearing completion. The building is being erected for this especial purpose, and will be separate and apart from the wards of the hospital. When completed it will be about forty feet square, one story in height, and will be divided into four rooms—one for autopsies, one for chemical analysis, one for microscopical examinations, and one for photography and micro-photography. Dr. H. M. Weeks has been appointed by our board of managers as the pathologist and bacteriologist of the institution. He comes to us well prepared for the work, having had considerable experience, both in this country and in Europe, in this line of work.

"At the coming session of the Legislature an effort will be made to get the State authorities to do something toward the establishment of an epileptic colony, and toward the erection of a special building for insane convicts. This has long been needed, but notwithstanding the earnest efforts made during the past three or four years before the Legislature to have them do something in this direction, thus far it has been a failure."

Since the last SUMMARY, Dr. Kirby, senior assistant physician, died suddenly after a very few hours' illness from angina pectoris. Dr. Ward writes the following tribute: "Dr. Kirby had been with me for a period of twenty-one years. He was my preceptor about thirty-five years ago. Having been with me so long in the work here, his death is not only a great loss to the institution, but to me personally as well." "The vacancy caused by the death of Dr. Kirby has been filled by the promotion of Dr. John C. Felty from the position of second assistant physician to that of senior assistant. Dr. Weeks takes the position of second assistant and pathologist. The position of fourth assistant, which has been so long vacant, was filled in June last by the appointment by the board of managers of Dr. Paul L. Cort, who comes well prepared for the work. Prior to his appointment he was resident physician of Mercer Hospital in Trenton.

"At the close of the month of September, ten hundred and sixty-four patients were under care in the institution."

—*Essex County Hospital for the Insane, Newark.*—Among the therapeutic results summarized in the last report are the following:

The combination of sulfonal and trional in equal parts (grs. 10-15) has proved very efficient in excitable cases and persistent insomnia, the slower hypnotic action of the former sustaining and prolonging the earlier effects of the latter in the combination. Occasionally codeine, gr. ¼, ½, enhances the effect of the other two. The Fleschig method of treatment of epilepsy, after diligent experiment, was found to be wanting in curative results. Explosions of the status epilepticus supervened in the majority of cases and bromides were resorted to in the usual doses to save life. The hydrocyanate of iron has also been given some trial in the treatment of epilepsy. Four cases are given in which the hydrocyanate was administered in half-grain doses. One patient appeared to be benefited, the number of convulsive seizures being reduced about one-half. In two other cases the improvement was doubtful or temporary, and in one case the epileptic seizures increased. The administration of thyroid to one patient was accompanied by progressive mental improvement.

The report of Dr. Hicks, the pathologist, is appended to that of the superintendent.

During the past year the laboratory has been utilized in six distinct fields of usefulness: 1. Urinary analysis; 2. Examinations of sputum, discharges, etc.; 3. Examination of blood; 4. Analysis of milk used by the hospital; 5. Microscopic examination of tissues for the twofold purpose of diagnosis and study; 6. Instruction of members of the Training School for Nurses in elementary histology and bacteriology.

The urine has been subjected to complete analysis chemically and the urinary deposits to a most careful microscopic examination in seventy-two cases. Urea was increased in nine and decreased in sixteen cases, and was therefore normal in amount in forty-seven.

The chlorides were persistently low, especially in the acute forms of insanity. In these cases where the chlorides were low the specific gravity was prone to be high. Patients suffering from acute mania or melancholia often take little water or none at all, and must be fed mechanically. They, therefore, often get insufficient fluid and salt. When the urine is concentrated and the chlorides diminished under such circumstances, the patient in many cases may be greatly benefited by adding salt to the prepared diet and by giving water several times a day. Indican appears to be increased most frequently in the acute insanities. Albumen in varying quantities, from a mere trace to thirty per centum, was found in twenty cases. The form of insanity seems to exert little influence in the production of albuminuria. Fifteen of the twenty cases of albuminuria were the results of nephritis, demonstrated by the presence of granular and hyaline casts in the urine.

The acetones appeared in conjunction with either glycosuria or acute febrile processes, pneumonia and phthisis. Acetones were found in the urine of a patient who subsequently died of carcinoma of the liver, breast, lungs and pelvic organs. Peptones were also found in this case.

The phosphates were increased in four cases, two of acute mania and two of acute melancholia. Sulphates were increased in one case—dementia paralytica. Oxalate of lime crystals were found in ten cases, all of which appeared to be physiological except two, cases of true oxaluria in acute melancholia. Spermatozoa were discovered in two samples of urine, both from patients suffering from acute melancholia.

The microscopic examination of the sputum has been utilized in differential diagnosis in lung diseases; consumption, bronchitis and pneumonia.

The blood has been examined in a few cases for the purpose of ascertaining the quantity of hæmoglobin, the ratio of leucocytes to erythrocytes and the character and condition of the corpuscles. A differential count has seldom been resorted to.

The milk used in the hospital has been analyzed from time to time. These tests have been made according to the German method by means of Von Feser's lactoscope, Quevenne's lacto-densimeter, Chevalier's creamometer, thermometer, and iodine solutions; the results verified by the color test and confirmed by the residue method.

Sections of tissue from the various organs of the body have been prepared and mounted for microscopic examination in a few cases of obscure or doubtful conditions, chiefly for purposes of diagnosis. The preparation of sections for permanent mountings, involving elaborate details of technique, has been largely crowded out by other work of greater clinical importance.

During the year twenty-four autopsies have been made and recorded.

The brain was examined in fifteen of these cases. Lesion of the skull bone was found in six cases, of the dura mater in five, of the pia mater in eight, of blood-vessels in six, and of the brain substance in two. There was cerebral hemorrhage in three cases, asymmetry in one, convolutional atrophy in two and general atrophy in one. Three cases presented no gross lesion of the cranial contents.

The thoracic, abdominal and pelvic organs were examined in twenty-one cases. There were morbid conditions of the lungs in seven cases: two of lobar pneumonia, one of carcinoma, and four of phthisis; of the pleura in seven, the pericardium in two, the heart muscle in four, the cardiac valves in four. In nine cases the kidneys were diseased, the liver in one, the stomach in one, the bladder in three, the prostate gland in one, and the peritoneum and intestines in three. Tuberculosis existed in four cases, or nineteen per cent.; kidney disease in nine cases, or forty-two per cent.

NEW YORK.—*Utica State Hospital.*—The Utica State Hospital has erected a coffee-roasting and spice-grinding plant. It is a two-story building, equipped with the most modern machinery. The intention is to roast at Utica all the coffee and grind all the spices used by the State hospitals. In this way it is hoped that there will be a gain with respect to economy and quality of coffee and spices. The building and equipment cost about $5000.

In this connection, interesting experiments have recently been conducted in regard to the saving of coffee and improvement of its flavor by fine pulverization. The Willard Hospital has figured a saving of about 25 per cent. by this simple means. Coffee is made by percolation through cotton in specially constructed urns.

The water supply of the Utica State Hospital, which has always been a matter of great solicitude, has been greatly improved by substituting a brick conduit with flag bottom for the eighteen-inch vitrified pipe which entered its reservoir. The hospital spring is situated about a mile from the building, in wooded land. It was found that willow roots had entered the vitrified pipe and choked it up effectually for its entire length.

The new agricultural colony at Graycroft, about a mile from the hospital, has proved a great success. About twenty patients have been maintained there, doing profitable work all summer as farm laborers.

—*Buffalo State Hospital.*—The new group of infirmary buildings, soon to be opened, contains one feature which is somewhat unusual in asylums for the insane, and promises to be of marked utility, viz. a clinical amphitheatre and operating-room. It has been the custom for a number of years to hold weekly clinical lectures on insanity during the school year, for the students of the medical department of the Buffalo University and Niagara University. The lectures heretofore have been given in the wards or in the chapel, and under disadvantageous circumstances. This new amphitheatre, which rises two stories, has abundant light, has a seating capacity for about 150, and will be extremely useful for this

purpose, as well as for the lectures in the training school for nurses, and for an operating-room when necessary.

The infirmary building is designed to care for the new admissions, and for the acutely sick, and, being fitted with convenient laboratories, every care and study can be given to the recent and curable cases. The wings are for the helpless and infirmary class, and patients in all stages of mental disease can be supplied for the lecture-room.

But few hospitals for the insane are located in or sufficiently near cities to make clinical teaching of insanity available to the classes in medicine, but the situation of this State hospital makes it convenient to carry out this very desirable branch of medical education, and it is gratifying to know that the needs of medical education in this instance are being met.

—*St. Lawrence State Hospital.—Training School.*—In spite of the more rigorous entrance examinations and increased requirements for graduation, the year has been a prosperous one for the training school. Out of a senior class of 15 who took the State examination conducted by superintendents, 14 passed successfully. 66 candidates took the examination for entrance to the junior class of '96 and '97, but the close of its session found its number reduced to 33 members, a reduction of about 50 per cent., which was brought about by failure of the candidates at midwinter and final June examinations, and the elimination of the unfit by their voluntary or forced resignations. 28 of the successful members of last year's junior class form the senior class of this year. For the junior class of '97 and '98, 33 candidates presented themselves at the examination conducted by State hospital superintendents. Of this number 25 passed successfully. The plan of having a few lectures delivered by outside physicians lends interest and adds dignity to the course. Greater attention is paid to practical ward instruction, bedside teaching, observation of symptoms and extended attendance upon the sick.

A separate pathological laboratory has been equipped and located in the mortuary, which was completed for use in May, 1897. Preservation, section cutting and complete indexing of specimens are carried out in conformity with the methods of the State Pathological Institute. The room formerly used for the general laboratory purposes has been improved by changes in the interior which more than double the working space. It is now devoted entirely to investigations in physiological chemistry and bacteriology. Its proximity to the wards for acute cases renders it particularly well fitted for its purpose, as fluids for analysis can be brought out at any hour and cared for without delay. New apparatus and instruments have been purchased and its equipment is modern and adapted for experimental work, particularly in urine, stomach contents and blood. All of the specimens and instruments pertaining to the pathological department have been removed to the new laboratory.

With increasing experience we have found it advisable to devote more and more time and attention to new admissions. In addition to the ordinary examinations given all new cases, we have begun a routine

examination of the blood, which includes cellular elements and hæmoglobin, and the eyes and teeth of all new patients are examined by a competent specialist for sources of irritation and correction of diseased conditions. Calisthenics and physical training, particularly for the male patients, have been found a very beneficial measure in convalescent cases. Two or more classes are formed and patients admitted to the classes in accordance with their physical condition or need of exercise. In proper cases surgical work of an elective nature continues to be promptly carried out.

The female nursing staff on our male convalescent and sick wards has become indispensable. A convalescent male ward of 50 paroled patients is cared for satisfactorily by three female nurses. All of the nursing upon male sick wards is done by female nurses without an increase in the ratio of nurses to patients and with little assistance from male attendants.

Thyroid treatment continues to give good results in our hands in properly selected cases. During the year 24 cases have been under treatment, with two complete recoveries and several improvements. Since the introduction of this treatment here, recoveries from its use number eight all told, and we now consider it an indispensable adjunct to the therapeutics of insanity, particularly in cases bordering on dementia.

Tuberculosis.—Our herd of milch cows has been tested for tuberculosis and a large proportion found to be diseased. It was first discovered in a cow which was killed in January for beef, and the tuberculin test was immediately applied to the entire herd. Of 111 cows so tested, 49 were condemned. These were isolated for three months and re-tested without showing any of them to be free from the disease. Subsequently 44, which had given negative results, were re-tested and 7 were condemned. The diseased animals were slaughtered and the carcasses converted in the rendering tank into suet and fertilizer. The herd was housed in new and well-ventilated stables and was, to outward appearance, sleek and healthy. The disease was located in the mediastinal lymph nodes, intestines, lungs, liver and udder, in frequency in the order named. The tuberculin test has proved, in our experience, to be an accurate one; in no case where the reaction amounted to two degrees did we fail to find tuberculosis upon autopsy.

The Farm Cottage, situated south of Group Three, is nearing completion and is expected to be occupied early in the spring. It provides accommodations for forty patients engaged in agricultural work, and is admirably situated at the entrance to the farm and very near the barns. For the convenience of this building, the sewer has been extended from Group Three a distance of 1800 feet. The new milk house is also nearly finished and will be occupied in a few weeks. This is a one-story building, a short distance from the barns upon the principal thoroughfare, where the milk will be cleaned by the centrifugal method and Pasteurized before it is distributed for use to the several dining-rooms. Its equipment will include an outfit for cleaning cans by steam. Four additional boilers of the Fitzgibbons pattern, 150 horse-power each, have been

installed in the boiler house. A new direct-connected generator and engine have been added to the equipment of the electric-light plant. This was made necessary by the needs of the recreation building and several smaller buildings that have been put up within recent years. The improvements on the grounds have gone on as rapidly as possible during the summer in conformity with the general improvement plan, and a number of walks and lawns have been made and several drive-ways and approaches macadamized.

North Carolina.—*The Eastern Hospital, Goldsboro.*—Last fall a four-story building was made ready for occupancy to accommodate ninety female patients. This building is now full, and more room is urgently needed for the accommodation of both male and female patients. During the past summer a new brick building was erected for the accommodation of our ventilating and heating apparatus, and almost the entire engineering work of the institution has been reconstructed, greatly to the benefit of the hospital.

The effort of the last Legislature to place the three hospitals for the insane under partisan management was foiled by the action of the Supreme Court, to which tribunal the authorities in charge appealed.

Each year adds testimony to the fact that lung degeneration is largely on the increase among the insane of the colored population.

Pennsylvania.—A State hospital for the criminal and convict insane was recommended by the grand jury in its final presentment for the October term of court. In accepting the presentment and discharging the jury, Judge Gordon said:

"There is only one suggestion in your presentment that calls for comment from the Court, and that is your recommendation for the removal of the insane from the Eastern Penitentiary. Your action on this subject is important, and will have valuable effect in consequence of its cumulative force, it being the third recommendation of similar import within a year.

"Let me say that the law for the removal of these unfortunates from prison to insane hospitals is clear, adequate and mandatory. It is not necessary for me to fix now the blame for the failure to obey the law. That it is not obeyed, and that its enforcement is obstructed, is notorious and discreditable. It is not the fault of the law, however. It cannot be made a reproach to the statutes, for I say to you that for 75 years the law has provided for and required the removal of all insane from the penitentiary to State hospitals. In this regard there is no obstacle to carrying out the dictates of humanity but the wilful resistance to law of those in power.

"And, gentlemen, there ought to be incessant agitation upon this subject until a permanent and effective reform is provided. It is sad beyond expression that a prisoner sentenced to deprivation of liberty should have his reason also taken from him by his environment or other causes

and no hand be stretched out to succor and relieve him. Such unfortunates have the first claim upon the State for humane treatment. If they become insane while the State has them in its charge undergoing punishment, it is unspeakably cruel to inflict further punishment upon them while in such a sad condition. To take a sane man from court to prison, keep him there until he loses his reason, refuse to treat him humanely afterwards, and at the expiration of his term to turn him loose upon the community a mental wreck, is a crime against the prisoner, against society, and a glaring violation of the law.

"I am glad you have taken occasion to make the recommendation you have upon this subject. It shows that the proceedings touching the matter during the past year have not fallen to the ground worthless, but that they have borne fruit in the community. I sincerely hope they may take deeper root and ground until the spontaneous humane impulses of the mass of the community, unhardened by official pride and callousness, will compel an effective redress of the evil. You have done well to add your voice in condemnation of a practice that outrages humanity."

—*State Hospital for the Insane, Warren.*—The wards of this hospital have been greatly overcrowded during the whole of the year, but more particularly during the last few months, so as to compel the issuing of the following circular:

"The State Hospital for the Insane at Warren, Penna., was constructed and organized for the care and treatment of the insane of the counties of Warren, Crawford, Erie, Mercer, Venango, Clarion, Forest, McKean, Elk and Cameron, and Potter was afterward added by legislative act.

"The number of insane from these counties on the first of August, 1897, was 688; private patients from different sections of the commonwealth, 83; from twenty-four counties outside of the district, 264; making the total 1015; showing a very much overcrowded hospital. The capacity of the hospital when constructed was considered to be for 700 patients.

"The law requires that 'while the finances of the State do not permit ample provisions for all cases of insanity, recent cases shall have preference over those of long standing.' In order to meet this requirement of the law, it is respectfully and earnestly requested that before making arrangements to bring a patient to the hospital, a statement be sent to the superintendent, giving the sex, age, length of time insane; the first symptoms, dating back not longer than six months; any previous attacks; any complications that may exist, such as paralysis, epilepsy, or alcoholism.

"No patient will be admitted unless these requirements are fully complied with; the question simply being whether this provision of the law shall be complied with; or the hospital completely closed to any further admissions, and the closing of the hospital is not a thing to be desired."

The general health of the household has been good. The trustees in the spring purchased a farm of nearly two hundred acres, with good buildings, which have been arranged with special reference to the accommodation of a number of patients who will devote their time to the im-

provement of the farm. The number of patients who can be comfortably accommodated will be fifteen. It will be the Farm Colony of this hospital.

—*Pennsylvania Hospital for the Insane, Philadelphia.*—The detached block known as the North Museum building has been occupied during the year by a group of women under the leadership of one of the patients' companions, three afternoons of each week, alternating with the meetings of the pottery class in the South Museum building. The room is attractively furnished and supplied with a number of magazines and pictorials. It affords facilities for many quiet hours spent outside of the wards, in an agreeable, home-like manner, with some of the accompaniments of social life commonly observed outside of a hospital. Every afternoon and evening of the week has a fixed arrangement and opportunity for diversion, occupation, or instruction.

At the Department for Men, the swimming-pool and baths is a place of daily resort for the pleasure and refreshment it affords. The special baths are frequently prescribed by the physicians, and have come to have a place for the medical treatment of melancholia, nervous exhaustion, and toxic conditions. The number of baths given weekly averages 300.

—*Friends' Asylum for the Insane, Frankford.*—The Home for Women Nurses is now completed and furnished and will soon be occupied. By action of the board, it has been named Elmhurst. It is located near the west end of the main building, which is used for women patients. Dr. Winter's quarters are on the first floor and the rest of the building is for the use of the women nurses, with the exception of two suites which may be utilized for patients.

The house is built of buff brick, is three stories in height, and is an attractive addition to the group of buildings. It is heated from our central plant, a new boiler of 125 horse power having been added for this purpose. There are three open fireplaces on the first floor and one on each of the upper floors. It is wired for electric lighting and a contract has been made with the Suburban Electric Light Company to supply the electricity. A useful feature of the building is a fire-proof room, built in the basement, in which may be stored the archives of the institution.

—*School for Feeble-Minded, Polk.*—This institution was formally opened on the afternoon and evening of September 23, 1897. Simple dedicatory exercises were held, and it is estimated that about three thousand visitors inspected the grounds and buildings during the day.

Polk is a hamlet of a half-dozen houses on the Lake Shore & Michigan Southern Railroad, six miles from Franklin, and twenty-five from Mercer. The location, somewhat inconvenient as to access, is otherwise a perfect one. The tract of land purchased—870 acres—will prevent any future crowding or shutting in, and can be utilized in developing ability for farm work among the pupils. The agricultural products will also add largely to the resources of the school. The water supply is exceptionally pure in quality, and practically inexhaustible in quantity. It is brought by

gravity from mountain springs two miles distant, and from an elevation of 190 feet above the establishment.

The buildings are plain and substantial, little money having been lavished on mere ornamentation. But they are artistic, in harmony with each other and with the landscape. They are of the Norman style of architecture, and arranged on the "family" or "cottage" plan. They are grouped on each side, and to the rear of the principal or administration building. In the latter are the offices and private rooms of the superintendent, the directors', steward's and bookkeepers' rooms, the library and reception rooms.

The buildings are all considered fire-proof, are built of brick, trimmed with stone and finished inside with Georgia pine. The floors of the corridors and dining rooms are of tile; the other floors of hard wood, with the main stairways of slate. The cottages are connected with the main building, dining rooms and school by long, covered passage-ways, with the sides almost entirely of glass. Those now finished are the administration building, boys', girls' and industrial school, teacher's residence, gymnasium, boys' and girls' dining halls, kitchen and bakery, cold storage, power house, laundry, workshop, etc., and sixteen cottages.

The cottages, like the other buildings, are two stories high, the lower rooms used by the inmates for studying and the upper as dormitories, where each child has his own comfortable, spotlessly clean bed. The eight cottages to the right of the administration building are assigned to the boys, and those to the left to the girls, and there is no direct communication between the two departments.

The industrial school department consists at present of a sewing room, where the girls are taught plain sewing, and a shoe shop. A tailor shop can soon be added, from which revenue will come. A large room has been fitted up as a manual training school where the Sloyd system is taught.

The boys are given military drill exercises, and the fine gymnasium, well equipped with modern appliances, is in daily use. The gymnasium has been named Kerlin Hall, in honor of Dr. Kerlin.

There are two large dining rooms, one for the boys and one for the girls, each with tiled floors, well ventilated and well lighted, a frieze of colored glass over the long windows adding to the cheerful and attractive appearance. The kitchen and laundry are admirably planned. In both these departments the pupils are employed as assistants. The abundance of light and excellent ventilation are special features of these buildings. The inmates now number about 350, 150 having been brought from Elwyn in April. Dr. J. Moorhead Murdoch is superintendent, and Dr. Henry McDowell, assistant physician.

VIRGINIA.—*Western State Hospital, Staunton.*—Among the improvements last year was an ice and cold storage plant, manufactured in Cincinnati. This plant consists of one ammonia-gas compressing pump, the cylinder of which is six inches in diameter, with a twelve-inch stroke, connected

directly with one thirty horse-power steam engine, all on one base. The compressor makes from eighty to a hundred revolutions per minute, and has 2000 pounds ice-making and 8000 pounds refrigerating capacity, besides cooling six rooms, the dimensions of which in all are 6800 cubic feet. One of these rooms is piped for butter, to maintain a temperature of from 32 to 35 degrees, or lower if necessary; another for vegetables, kept at from 45 to 50 degrees; and another for general purposes, which may be kept at any temperature desired. One room is for chilling meats and two for storing them for any length of time required, for six months or longer. In addition to the compartments already mentioned, there is a vestibule four feet wide, ten feet high, and twenty-eight feet long, in which the animal heat is taken from the meats, after which they are taken to a large chilling room and cooled to the proper temperature, when they are taken into the storage room mentioned above. Here they are kept at a temperature of from thirty-two to forty degrees, and are taken out for use at such times as they may be needed.

The plant also makes 2000 pounds of ice a day, using the brine system. The brine tank is sixteen feet long, seven feet wide, and four feet high, and contains about forty freezing moulds of 100 pounds each. The capacity is 100 pounds of ice every hour. The same brine which converts the water into ice is used for the cooling room referred to above. A large brine pump distributes the brine through one and a quarter inch pipes, so arranged that the rooms can be cooled all together or separately, and to different temperatures. The six rooms will hold from fifteen to twenty beeves, besides fruit, butter, eggs and such other perishable articles as are used by the hospital. They are arranged with overhead railway tracks, furnished with rollers and meat hooks, and with switches by means of which the meats can be easily carried from one room to another. They are perfectly ventilated with traps in the ceiling, by which the animal heat and any foul air that may accumulate may escape.

The machinery is run at a very low expense, not using more than seven or eight gallons of water per minute. The steam used is from the general boilers. The expense of the chemicals will not exceed $10 or $15 a year. As the machine is almost automatic, it requires attention only two hours a day.

The plant is considered an economical investment. Heretofore beef has been delivered in lots of from ten to fifteen head, and as only one could be killed a day, the expense of feeding before slaughtering was considerable. And besides the disadvantage of being obliged to use the beef before the animal heat was well out of it, experience has shown that from drift and other causes there was a loss of an average of one hundred pounds per head between the time of purchasing and that of using the meats. There will also be a saving by purchasing and storing butter, eggs, etc., at such seasons as they are abundant and cheap.

WISCONSIN.—The SUMMARY is indebted to Dr. Becker, of Milwaukee, for papers on the insanity law of that State. The difficulties and misun-

derstandings arising from commitments under the old law, characterized as a "lawyer's law," has been in great measure overcome by Chapter 319 of the Laws of 1897, passed in April. The results attained by the new statute now in operation are stated by Dr. Becker to be as follows:

"Since doctors must hold the commitment of the insane essentially a medical matter and only by sufferance a judicial one, and since this law has been a compromise between the medical and legal bearings of the subject, it is not only our right but our duty to construe it in a way most favorable to the interests of the patient. This would be to bring as little judicial or official proceeding into the case as possible, and though it is necessarily somewhat involved in its phraseology, to keep it simple in its operation. Thus it would seem that the proceeding ought to be as follows:

"Three respectable citizens make application to the county judge.

"The judge thereupon appoints the two physicians.

"Such physicians, after being registered as qualified, proceed either singly or jointly to examine the patient. For reasons that *notice* would be 'injurious' or of 'no advantage to him by reason of his mental condition,' they do not give him *notice* and state their reasons as here quoted or at greater length in their report. Or if they feel bound to give the notice in certain cases (in which it would seem they are inconsistent if they have no doubt of the insanity or the propriety of commitment), they should explain to the patient that it is a formality and dissuade him from making a defense.[1]

"The patient in the meantime to be in temporary detention quarters when and wherever such are established.

"The judge in nearly all cases to accept the opinion of the physicians as to notice and their report as to insanity, and to issue the commitment without further proceeding if the patient is found insane.

"The patient then, whenever possible, to be conveyed to the hospital by a friend.

"The most important features of the new law have thus been alluded to. For others the reader is referred to the text of the law. It should be mentioned that this law does not repeal the entire old law, but only such parts as are in conflict with it.

"In closing, it may be asked what has been accomplished by the passage of this law—what has been gained or lost by the compromise.

"To this it may be answered: Removal of the legal and practical chaos that has prevailed in the commitment of the insane in Milwaukee.

"Preventing passage of a 'lawyer's law' making notice necessary in every case, or establishing compulsory jury trial, or providing guardian *ad litem* in every case.

[1] At the time of going to print [May, 1897] there have been—during the few days that the law has been in operation in Milwaukee—nine commitments. In seven of these no *notice* was given the patient by physicians nor judge. In two, *notice* was given by physicians, but no hearing was desired by patient. There have also been two voluntary commitments in addition.

"The leaving of large discretion to the commitment magistrate.

"A law which in its practical application need not be so strenuous as to injure the medical requirements of the insane, yet is strenuous enough to stand muster in the courts and allay all future suspicion of possible fraudulent or improper commitment."

QUEBEC.—*Protestant Hospital for the Insane, Montreal.*—The Annex, a separate building with a capacity of one hundred beds, for the reception of chronic, violent and uncleanly patients, was opened during the summer. It has proved a great boon, admitting, as it does, of a much better classification of the inmates in the hospital proper.

The new infirmary is almost ready for occupation. This is a detached stone building of ornamental design, having a capacity of twelve beds, with diet kitchen, operating room and post-mortem room attached. When opened it will be in charge of a trained hospital nurse, being specially intended for medical and surgical cases which could not receive all the advantages of modern treatment in the general wards of the hospital. Wide balconies, with a southern exposure, are provided for the benefit of convalescing patients.

The erection of a new flight of granite steps, sixteen feet wide, protected by a handsome porte-cochère at the main entrance of the hospital, has added greatly to the appearance of the building. A new horse stable, to replace that destroyed by fire on Christmas morning last, has been built at a cost of $5000. The original electric plant being now inadequate to the wants of the institution, a new one with duplicate dynamos, storage batteries, etc., is to be installed.

A noteworthy event during the past half-year was the meeting of the British Medical Association in Montreal. The members of the Psychological Section were driven out to the hospital and, after partaking of refreshments, were conducted over the entire institution, with which they expressed themselves as much pleased.

Appointments, Resignations, Etc.

ALLEN, DR. GEORGE, formerly First Assistant Physician at the Middletown State Homeopathic Hospital, appointed Superintendent of the Collins State Homeopathic Hospital, Collins, N. Y.

ARTHUR, DR. DANIEL H., promoted to be Second Assistant Physician at the Middletown State Homeopathic Hospital, Middletown, N. Y.

BELL, DR. SAMUEL, appointed Medical Superintendent of the Upper Peninsula Hospital for the Insane, Newberry, Mich.

BOLTON, DR. JAMES R., appointed Third Assistant Physician at the Essex County Hospital for the Insane, Newark, N. J.

CORT, DR. PAUL L., appointed Fourth Assistant Physician at the New Jersey State Hospital at Trenton.

FELTY, DR. JOHN C., promoted to be Senior Assistant Physician at the New Jersey State Hospital at Trenton.

FRANCISCO, DR. DAVID E., promoted to be Junior Assistant Physician at the Middletown State Homeopathic Hospital, Middletown, N. Y.

FURLONG, DR. FRANCIS M., appointed Junior Assistant Physician at the Matteawan State Hospital, Fishkill, N. Y.

GIVENS, DR. JOHN W., reappointed Medical Superintendent of the Idaho Insane Asylum, Blackfoot, Idaho.

HONER, DR. J. RICHEY, appointed Junior Assistant Physician at the Middletown State Homeopathic Hospital, Middletown, N. Y., May 1, 1897; resigned October 1, 1897, to accept a professorship in the Cleveland Homeopathic Medical College, Cleveland, Ohio.

INCH, DR. GEORGE F., promoted to the Medical Staff of the Michigan Asylum for the Insane, Kalamazoo, Mich.

KINNEY, DR. C. SPENCER, promoted to be First Assistant Physician at the Middletown State Homeopathic Hospital, Middletown, N. Y.

MASON, DR. G. C., appointed to the Superintendency of the Southern Hospital for the Insane, Evansville, Ind.

MCCALMONT, DR. HARRIET O., formerly of the State Hospital at Warren, Pa., appointed to the Medical Staff of the Michigan Asylum for the Insane, Kalamazoo, Mich.

POTTER, DR. CLARENCE A., appointed Medical Interne at the Middletown State Homeopathic Hospital, Middletown, N. Y.

POWELSON, DR. ARTHUR PALEN, promoted to be Junior Assistant Physician at the Middletown State Homeopathic Hospital, Middletown, N. Y.

ROBERTSON, DR. E. H., formerly of the Michigan Asylum for the Insane, appointed to the Chair of Pathology in the University of Colorado.

SESSIONS, DR. SARAH K., appointed Assistant Physician at the Southern Hospital for the Insane, Evansville, Ind.

SHAW, DR. HARRY L. K., appointed Junior Assistant Physician at the Utica State Hospital, Utica, N. Y.

TEETER, DR. J. NELSON, resigned as Assistant Physician at the Utica State Hospital, Utica, N. Y.

TRUSSLER, DR. LESLIE L., appointed Assistant Physician at the Southern Hospital for the Insane, Evansville, Ind.

WEEKS, DR. H. M., appointed Second Assistant Physician and Pathologist at the New Jersey State Hospital at Trenton.

WILLIAMS, DR. E. H., Assistant Physician, transferred from the Matteawan State Hospital, Fishkill, N. Y., to the Manhattan State Hospital, New York City.